Marketing

January 2011
Volume 75, Number 1

75th ANNIVERSARY
Journal of Marketing

CUG H05809-22-6P2857

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AMERICAN MARKETING ASSOCIATION

Call for Papers:

JPP&M Special Issue on "Social Entrepreneurship"

Social entrepreneurship is attracting increasing attention from researchers in a variety of academic disciplines There is a desire to create knowledge that could assist social entrepreneurs in combating problems involving poverty, health, the environment, and other areas By social entrepreneurs, we mean "individuals who start up and lead new organizations or programs that are dedicated to mitigating or eliminating a social problem, deploying change strategies that differ from those that have been used to address the problem in the past." Notable social entrepreneurs include (1) Mohammad Yunus, founder of the Grameen Bank's microlending program in Bangladesh, (2) Wendy Kopp, founder of Teach for America, which places recent college graduates as teachers in inner-city schools for a two-year stint; and (3) Paul Farmer, founder of Partners in Health, which provides low-cost treatment for AIDS, tuberculosis, and other diseases in Haiti and throughout the developing world

Scholars interested in public policy and marketing have the potential to offer considerable guidance to social entrepreneurs. Research work in areas such as consumer behavior, social marketing, branding, franchising, marketing strategy, and program/policy evaluation could be extended and built on to provide insights for social entrepreneurs. Papers for the special issue are sought in areas such as the following:

- What leads consumers/individuals to behave in ways that exacerbate certain social problems? Why do people act in self-destructive, selfish, unsafe, or antisocial ways, and what can social entrepreneurs or their organizations do to change these behaviors?
- What leads consumers/individuals to want to support the efforts of social entrepreneurs as volunteers, donors, investors, employees, or voters? How can more people be persuaded to become supportive?
- What strategies are most effective for scaling up the impact of a social entrepreneurial initiative? What role can branding, pricing, franchising, alliance building, advertising, and lobbying play? Are there best practices, or what practices should be avoided?
- How can cause marketing and similar alliances between social entrepreneurial organizations and corporations be configured to be win-win situations for both parties?
- How can the social impact of a social entrepreneurial initiative be measured and monitored?

These are just a sampling of the topics that could be addressed. Submissions should draw on sound theoretical thinking and should employ rigorous methods to describe, explain, or predict phenomena Case study material is acceptable, but research in the field has been dominated by descriptive case work, so contributions using other methodological approaches are particularly welcome.

***Please submit manuscripts to* http://mc.manuscriptcentral.com/ama_jppm**
***and designate the manuscript type as* "Special Issue Submission."**

Submission Deadline: April 1, 2011 **Expected Publication Date:** Spring 2012

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Journal of
Marketing

Vol. 75, No. 1

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Journal of Marketing (ISSN 0022-2429) is published bimonthly (January, March, May, July, September, and November). *Annual Subscription Rates:* Subscriptions are $135 for individuals in the United States and Canada and $180 in other countries. Library, school, and business subscriptions are $375 in the United States and Canada and $410 in other countries. Subscriptions for AMA members are $65. Prices are for one year. Single copy rate: $50 individual, $60 corporate in the United States and Canada; add $5 in other countries. Prepayment is required in U.S. dollars or the equivalent.

Published by the Publications Group of the American Marketing Association, 311 S. Wacker Dr., Suite 5800, Chicago, IL 60606-2266. Periodicals postage paid at Chicago, IL and additional mailing offices. POSTMASTER: Send address changes to the *Journal of Marketing*, 311 S. Wacker Dr., Suite 5800, Chicago, IL 60606-2266, USA.

MANUSCRIPTS: Electronic submissions must be made via the *JM* Web site at http://mc.manuscriptcentral.com/ama_jm. Paper submissions are not accepted. Editorial policies, review board members, Tables of Contents for *JM*, and so on, are available on the *JM* Web site at http://www.marketingpower.com/jm.

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Shibin Sheng, Kevin Zheng Zhou, & Julie Juan Li

The Effects of Business and Political Ties on Firm Performance: Evidence from China

Despite increasing attention to the role of social ties in emerging economies, few studies have explicitly distinguished the differential roles of business versus political ties Drawing on relational governance and institutional theories, this study offers a contingent view of business and political ties in China The findings from a survey of 241 Chinese firms indicate that business ties have a stronger positive effect on performance than political ties, and both effects depend on institutional and market environments Business ties are more beneficial when legal enforcement is inefficient and technology is changing rapidly, whereas political ties lead to greater performance when general government support is weak and technological turbulence is low These findings indicate that firms operating in China should be cautious in their use of business and political ties and adapt their tie utilization to changing institutional and market environments

Keywords social ties, emerging economy, relational governance, institutional theory, institutional environment, *guanxi*

In recent years, strategic issues in emerging economies have attracted increasing attention in marketing strategy and relationship marketing literature (Ambler and Witzel 2004, Gu, Hung, and Tse 2008, Johnson and Tellis 2008, Walters and Samiee 2003) As a consequence of their economic liberalization and transition toward market systems, emerging economies experience rapid changes in their economic, social, and legal institutions, which create severe challenges for marketers (Zhou and Poppo 2010) In such turbulent circumstances, social ties emerge as an important strategic option that may enable firms to secure resources and deal with uncertain environments (Ambler and Witzel 2004, Peng 2003) Because social ties coordinate exchanges through informal, interpersonal social mechanisms (Granovetter 1985), they help overcome the limits of weak institutional infrastructures (Xin and Pearce 1996), especially in uncertain times (Heide and Wathne 2006, Uzzi 1997) In general, empirical evidence supports the positive effects of social ties on market (Gu, Hung, and Tse 2008, Li and Zhang 2007) and financial (Khwaja and Mian 2005, Li, Poppo, and Zhou 2008) performance in emerging economies

Despite increasing interest in this topic, several aspects of social ties in emerging economies remain underdeveloped First, extant research from a relational governance perspective (Granovetter 1985, Heide 1994, Uzzi 1997) recognizes the benefits of business ties, including relational connections with buyers (Heide and John 1992), suppliers (Jap and Ganesan 2000), and collaborators (Rindfleisch and Moorman 2001) Yet few studies in marketing explicitly consider political ties or distinguish the effects of business and political ties Because of the lack of market-supporting institutions, governments in emerging economies are active in regulating industry development, guiding business policies, and influencing corporate operations (Hoskisson et al 2000) Thus, building relationships with various government agencies (i e , political ties) is imperative for firm survival (Ambler and Witzel 2004, Hillman, Zardkoohi, and Bierman 1999) However, previous studies have tended to treat business and political ties as the same (Peng and Luo 2000) or have captured ties with one dimension (Gu, Hung, and Tse 2008, Li, Poppo, and Zhou 2008), so it is still unclear whether business or political ties play more salient roles in emerging economies

Second, according to institutional theory, social ties as informal governance become less important when legal and regulatory institutions improve and market-supporting systems develop (North 1990, Peng 2003) Market transitions in emerging economies foster dramatic changes in both formal (e g , laws, rules, regulations) and informal (e g , cultures, ethics, norms) institutions, which diverge across regions and industries (Hoskisson et al 2000) For example, despite the continued efforts of China's central government to develop a unified legal framework, it has not established a stable legal institution for enforcing contract law nation-

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© 2011, American Marketing Association
ISSN· 0022-2429 (print), 1547-7185 (electronic)

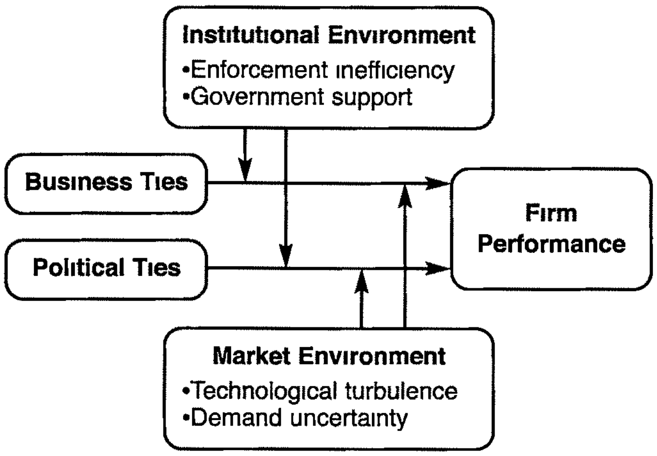
wide (Luo 2007) However, because extant studies generally treat legal and regulatory frameworks as static backgrounds (Meyer et al 2009) or theorize without explicit reference to institutional contexts (Steenkamp 2005), little is known about how variations in formal institutions affect the role of ties

Third, from a relational governance perspective, the effect of social ties depends on exchange characteristics (Rindfleisch and Heide 1997), and one of the most salient exchange characteristics is uncertainty, which comprises technological turbulence and demand uncertainty (Poppo and Zenger 2002) Empirical evidence regarding the effect of uncertainty is mixed Whereas Gu, Hung, and Tse (2008) find that the role of ties declines when technology changes rapidly, Li, Poppo, and Zhou (2008) show that social ties lead to better performance as industrial uncertainty increases We suspect that this inconsistency can be resolved, at least partially, by differentiating between business and political ties Because the two types of ties involve different resources, their contingent value may differ according to the environment variations

Building on relational governance and institutional theories, we develop a conceptual framework (see Figure 1) that depicts the interplay among social ties, institutional factors, and market uncertainty We distinguish between business and political ties and compare their relative effects on firm performance Then, we assess whether the effects of business and political ties are conditional on institutional factors, such as enforcement inefficiency and government support, and exchange characteristics, including technological turbulence and demand uncertainty Taken together, our efforts yield a contingent view of ties and provide a deeper understanding of business versus political ties in emerging economies

We select China as our empirical setting for four main reasons First, China has employed a dual-track approach to its market transition that liberalizes the former central planning system but retains government controls (Luo 2007) Thus, both the market and the government shape business operations and conduct, such that firms have incentives to build ties with both the business community and government authorities Second, China has a long tradition of using ties to conduct business, and marketing in China depends heavily on social connections (*guanxi* in Chinese) (Ambler, Styles, and Wang 1999) Third, although China has developed de jure unified laws nationwide, legal enforcement exhibits wide variations across regions because of the frequent interventions of local governments and various interpretations of laws by different enforcement authorities (Ambler and Witzel 2004, Zhou and Poppo 2010), de facto, the legal institution is not unified Fourth, China is a major player in the world economy, and successful operations in China have become increasingly important for many multinational firms (Johnson and Tellis 2008) Therefore, modern marketing is particularly interested in the unique characteristics of China's emerging market (Gu, Hung, and Tse 2008, Walters and Samiee 2003)

FIGURE 1
The Conceptual Model



Theory and Hypotheses

Business Versus Political Ties

Because economic action is embedded in networks of interpersonal relations, the relational governance perspective highlights the importance of social ties as informal governance for coordinating exchanges (Heide 1994, Morgan and Hunt 1994, Uzzi 1997) Through their networking activities and personal interactions, firm executives build social ties not only with business players but also with government officials Business ties are a firm's informal social connections with business organizations, such as buyers, suppliers, competitors, and other market collaborators Political ties are a firm's informal social connections with government officials in various levels of administration, including central and local governments, and officials in regulation agencies, such as tax or stock market administrative bureaus (Li, Zhou, and Shao 2009, Peng and Luo 2000) Both forms of ties rely on personal interactions and social networks, instead of formal contracts and arm's-length transactions, to obtain resources and facilitate cooperation However, business and political ties differ fundamentally with respect to the resources they may provide and their cooperation time horizons

Business ties provide firms with important market resources First, they offer crucial market information that may not be available in the open market, such as product information (Heide and John 1992), pertinent events or changes in the market (Lusch and Brown 1996), and information about trustworthy and untrustworthy partners (Poppo and Zenger 2002) Second, close social interactions and communications promote learning and mutual adjustment between business partners and facilitate knowledge transfer and technology acquisition (Rindfleisch and Moorman 2001, Saxenian 1996) By integrating new knowledge with its existing knowledge, a firm can increase its absorptive capacity and knowledge utilization (Cohen and Levinthal 1990) Third, because past behaviors are observable and indicative of the firm's reputation, social ties can help the firm obtain network legitimacy in a business community (Rao, Chandy, and Prabhu 2008) Such legitimacy is a strategic resource that may attract business partners, facilitate transactions, and offer economic benefits (Dacin, Oliver, and Roy 2007)

In contrast, political ties help firms obtain key regulatory resources First, governments in emerging economies guide economic activities by devising industry development plans and setting regulatory policies Political connections provide firms with crucial access to policy and aggregate industrial information (Hillman, Zardkoohi, and Bierman 1999) Second, the Chinese government still controls a significant portion of scarce resources, such as land, bank loans, subsidies, and tax breaks, and a firm's connections with government officials offer shortcuts to these resources (Faccio 2006, Khwaja and Mian 2005) Third, political ties improve a firm's political legitimacy, or the extent to which government officials or agencies assume that the focal firm's actions are desirable and proper (Suchman 1995) For example, Chinese firms with government connections can gain political legitimacy by obtaining positions in parliament (Peng, Tan, and Tong 2004) Political legitimacy then helps firms receive exclusive government endorsements and favorable treatment

Business and political ties also differ with respect to their time horizons In business ties, firms have common interests in maximizing their economic returns, so the parties work together to coordinate exchanges (Ghosh and John 1999, Lusch and Brown 1996) Ongoing interactions and collaborations cultivate trust, commitment, and mutual dependence between them (Morgan and Hunt, 1994, Poppo, Zhou, and Ryu 2008) Such relational norms constrain their opportunistic behaviors, reduce the perceived risks and transactional costs in the relationship, and encourage long-term cooperation (Ganesan 1994)

In contrast, political ties lack an effective mechanism to ensure long-term cooperation In China, the bureaucratic system is characterized by a hierarchical structure in which the superordinate government has the power to appoint and promote subordinate government officials (Du, Lu, and Tao 2008) Government officials' primary interests center on developing their political careers, whereas business organizations attempt to achieve economic returns Accordingly, the top priority of government officials is to please superordinate officials, not to accommodate business organizations, and this goal divergence may create relationship conflict that mitigates long-term cooperation

Moreover, government officials rotate their positions across different departments and geographic locations regularly, which may weaken or terminate a firm's political connections Political ties even may become a liability if incoming government officials represent a rival political group (Siegel 2007) In anticipation of such bureaucratic volatility, firms may be less committed to long-term political relationships In addition, in political relationships, business organizations tend to depend more on political parties because the latter control scarce regulatory resources (Li, Zhou, and Shao 2009) Government officials (as the less dependent partner) are less motivated to develop strong, long-term relationships with business organizations (Ganesan 1994) Therefore, political ties tend to be more transient than business ties

When a limited time horizon exists in a relationship, exchange parties, especially if they possess greater power (i e , government officials), are more likely to engage in opportunistic behaviors (Rokkan, Heide, and Wathne 2003) For example, government officials may engage in rent-seeking behaviors to obtain personal benefits at the expense of business organizations (Shleifer and Vishny 1994) Government officials who want to maximize their short-term interests (e g , get a promotion) may even issue direct commands or oblige firms to undertake projects with high social but low private returns (Shleifer and Vishny 1994) Dinc (2005) finds that government officials in emerging economies require politically connected banks to increase lending to boost their popularity among voters Thus, although both business and political ties provide valuable resources, the short-term nature of political ties may make them less beneficial

> H_1 Business ties have a stronger positive effect on firm performance than political ties

Contingent Effects of Institutional Environment

According to institutional theory, institutions support the effective functioning of the market mechanism (North 1990), and when formal institutions fail, informal governance mechanisms, such as social ties, act as substitutes to facilitate economic activities (Peng 2003) Institutional theory also predicts that social ties serve as a key form of governance during early transition phases in emerging economies in which market-supporting institutions are lacking, when emerging economies are more market oriented and marketing-supporting institutions are better developed, firms rely less on social ties to coordinate exchanges (North 2005, Peng 2003) This contingent view suggests that the effects of social ties depend on institutional contexts Therefore, we examine the contingent effects of enforcement inefficiency and government support that characterize legal and regulatory institutional frameworks (Meyer et al 2009)

Enforcement inefficiency refers to the extent to which the enforcement of legislation and regulations is problematic, as reflected by unlawful or unethical corporate behaviors (Ho 2001) Third-party legal enforcement is an essential public good that governments provide (North 1990) and can be more critical than written codes for supporting an efficient economic exchange system (North 2005) When legal institutional frameworks fail to impose effective punishments, unlawful or unfair competitive behaviors (e g , false advertising, piracy, contract violations, counterfeiting) prevail in the market and disrupt economic order (Ho 2001) With inadequate legal institutions, firms find it difficult or expensive to follow normal legal processes to gain protection against such behaviors (McMillan and Woodruff 1999)

In such a situation, business ties can proxy for the legal framework to prevent unlawful or unethical behaviors through a legitimating mechanism (Grewal and Dharwadkar 2002) If courts fail, a strong reputation within the network can facilitate transactions because companies seek out only trustworthy partners (Zhou and Poppo 2010), which deters unlawful or unethical behaviors between firms connected by business ties Even if market actors do not have ongoing relationships, network reputation makes the focal firm more desirable as a partner because other firms want to pursue legitimacy in the eyes of important stakeholders (Rao, Chandy, and Prabhu 2008), so they avoid unlawful competitive behaviors against the focal firm A firm with high network legitimacy also exerts significant influence within its professional network (Dacin, Oliver, and Roy 2007), which deters other firms from opportunistic behaviors

Political ties provide an alternative enforcement mechanism through enhanced political legitimacy and status With strong political ties, managers can turn to government officials to enforce business contracts or stop unlawful behaviors When legal enforcements are ineffective, firms with close political connections can exploit the power of their government connections, and government involvement in these incidents may work more effectively than the legal process (Ambler and Witzel 2004) Moreover, inefficient enforcement significantly increases the costs of legal actions against unlawful behaviors (Johnson, McMillan, and Woodruff 2002), which makes political ties more critical for supporting transactions and preventing unlawful competition In contrast, when legal enforcement is efficient, the importance of political legitimacy declines because firms can protect their interests through the courts at relatively lower costs Thus

> H_2 Enforcement inefficiency positively moderates the relationship between (a) business ties and firm performance and (b) political ties and firm performance

Government support reflects the extent to which the local government provides general and broad support to all firms in the region (Li and Atuahene-Gima 2001) Such general support differs from regulatory resources a firm can obtain through political ties The former is available inclusively to all firms in the region, the latter is available exclusively to a focal firm that owns the political connection Although the ultimate goal of China's central government is to build a strong bureaucratic system that facilitates business operations, government support varies across regions and areas as a result of uneven economic and institutional reforms (Luo 2007)

Strong government support may reduce the value of business ties The Chinese government not only regulates economic exchanges but also participates actively in the market by owning thousands of enterprises and controlling business projects (Ambler and Witzel 2004) If government agencies pass on all relevant information to the public, business connections are less valuable for providing such information Similarly, if a government provides an efficient infrastructure to support economic exchanges, managers rely less on network legitimacy to facilitate transactions (Rao, Pearce, and Xin 2005)

The value of regulatory resources obtained from political ties also may decline with strong government support A supportive government delivers valuable policy and industry information through public channels and provides scarce resources, such as subsidies and tax breaks, according to a set of clear rules As a result, a firm's political ties lose their exclusive value for obtaining information and government-controlled resources (Rao, Pearce, and Xin 2005) If the government provides fair support to all firms to facilitate economic exchanges, it is less necessary for the firm to rely on political ties to gain legitimacy and get things done

This discussion suggests that formal government support reduces the effect of informal social ties, yet previous literature also debates whether formal and informal governance mechanisms are complements or substitutes Because formal governance (e g , contracts) specifies rules and obligations, it may signify distrust and supplant informal governance, or because a contract contains expectations, it may promote informal, trust-based ties (Lazzarini, Miller, and Zenger 2004, Poppo and Zenger 2002, Stump and Heide 1996) Zhou and Poppo (2010) extend this line of inquiry to changing legal institutions and find that as legal institutions develop in China, companies rely more on formal governance (i e , contracts) and less on informal mechanisms (i e , trust) to coordinate their risky exchanges That is, the choice of governance mechanism depends on the institutional context Consistent with this contingent view, we posit that strong government support, as a formal market-supporting institution, reduces the performance effects of informal ties

> H_3 Government support negatively moderates the relationship between (a) business ties and firm performance and (b) political ties and firm performance

Moderating Effects of Market Environment

Studies rooted in a relational governance perspective often pay attention to the impact of exchange characteristics (e g , Rindfleisch and Heide 1997), such as uncertainty, which creates a need for mutual adaptation in market exchanges (Williamson 1996) Because uncertainty minimizes the effectiveness of governance for safeguarding and enforcing business relationships (Anderson and Weitz 1989), it is important to investigate the interplay between social ties and external environment uncertainty, which we conceptualize with regard to technological turbulence and demand uncertainty

Technological turbulence refers to the speed of change and unpredictability of technology in a specific industry (Jaworski and Kohli 1993) A rapidly changing technological environment creates new product development opportunities that firms can use to appeal to and expand their customer bases It also creates challenges that may propel firms to change or upgrade their products to maintain superior competitive positions (Tushman and Anderson 1986) Firms must overcome challenges and seize opportunities by developing advanced new products, otherwise, they will be squeezed out of the market (Li and Calantone 1998) Therefore, rapidly changing technologies obligate firms to obtain new technologies and skills to introduce new products quickly

Market resources accrued from business ties may help firms circumvent technological turbulence Business ties help a firm acquire the latest market information, including technological changes in the marketplace, and technological resources (Rindfleisch and Moorman 2001), which enhance its capabilities to identify and respond quickly to new market opportunities In an industry characterized by complex and expanding knowledge and technology, innovations may emerge from networks of learning rather than individual firms (Gulati 2007) In addition, a firm's network legitimacy helps it attract more technological cooperation partners As Gulati and Gargiulo (1999) show, firms with prior mutual alliances and common third parties in a network are more likely to form new technological cooperation alliances Thus

> H_{4a} Technological turbulence positively moderates the relationship between business ties and firm performance

In contrast, political ties may be less effective in conditions of high technological turbulence A firm's knowledge and absorptive capability is one of the dominant sources of competitive advantage in turbulent technological environments (Cohen and Levinthal 1990) Although government-controlled resources obtained from political ties, such as land, bank credits, or tax subsidies, enable firms to expand production capabilities and reduce costs, they do not directly improve technological innovation capability, which is critical for dealing with technological turbulence (Tushman and Anderson 1986) Therefore, technological turbulence attenuates the value of these resources

Moreover, a firm's absorptive capacity largely depends on its research-and-development (R&D) activities, which demand substantial financial and managerial investment (Cohen and Levinthal 1990) However, R&D investment is highly uncertain and risky because inputs do not lead automatically to successful new products or superior financial performance (Tellis, Prabhu, and Chandy 2009) If a firm can capitalize on relatively low-cost regulatory resources, such as low-interest loans and free land, it may commit fewer financial and managerial inputs to R&D and innovation activities (Kornai, Maskin, and Roland 2003) In addition, reliance on regulatory resources may have a negative impact on innovative corporate cultures For example, Tan (2001) finds that managers in firms with direct political ties and access to regulatory resources are less innovative and tolerant of risk Thus, the heavy use of regulative resources may inhibit a firm's absorptive capacity and impair its performance in conditions of high technological turbulence

> H_{4b} Technological turbulence negatively moderates the relationship between political ties and firm performance

Demand uncertainty refers to the instability and unpredictability of consumer preferences and expectations In a market with high demand uncertainty, firms must modify their products and services continually to meet changing customer preferences (Jaworski and Kohli 1993) In such conditions, the value of market resources accrued from business ties appears more salient Business ties provide valuable access to trustworthy market information that has not been codified or placed in the public domain (Li, Poppo, and Zhou 2008), which can help the firm develop new products appealing to changing customer needs (Rindfleisch and Moorman 2001) Connections with technology collaborators help a firm acquire advanced technology to improve the speed and quality of new product development, which is critical when demand changes rapidly Furthermore, network legitimacy induced by business ties facilitates cooperative activities, which enable firms to respond rapidly to changing demand (Uzzi 1997) Thus

> H_{5a} Demand uncertainty positively moderates the relationship between business ties and firm performance

In contrast, the benefits of political ties may decrease with demand uncertainty First, information that government agencies provide is usually aggregated, such as industrial or regional economic output Such information tends to take a relatively long time to collect and compile, such that it becomes dated quickly in a volatile market (Glazer and Weiss 1993) Therefore, it offers limited insights into how firms should adjust their offerings to respond to changing market demand Second, in a stable market, government-controlled resources may help a firm expand its production capability, in a volatile market, changes in demand may reallocate the opportunities before the firm can capitalize on such resources As Nee and Opper (2007) find in their examination of a large sample of Chinese firms, competitive advantages stemming from political capital are highest in regulated and state-dominated markets, but political connections do not generate positive returns in competitive markets Therefore, the value of regulatory resources declines as demand uncertainty increases

> H_{5b} Demand uncertainty negatively moderates the relationship between political ties and firm performance

Method

Sample and Data Collection Procedures

We selected high-tech firms in China as our empirical setting Because the Chinese government views high-tech industries as strategically important, it supports these firms with preferential policies, tax breaks, and bank credits Therefore, networking with government officials is a pervasive strategic choice (Li and Zhang 2007) Both domestic and foreign firms in China use local managers for their network building (Li, Poppo, and Zhou 2008), so we selected local senior managers (e g , chief executive officer, general manager, senior marketing manager) as key informants and conducted the interviews in Chinese

We developed the questionnaire using Gerbing and Anderson's (1988) recommended procedures First, we conducted in-depth interviews with 12 senior managers in Shanghai and Guangdong to understand industry practices These interviews revealed that networking with both the government and business communities is prevalent in the high-tech sector Second, on the basis of these interviews and an extensive review of previous literature, we developed an English version of the questionnaire, translated it into Chinese, and then commissioned a back-translation by two independent translators to ensure conceptual equivalence Third, we conducted a pretest with 50 managers from 25 firms (2 managers each) in Shanghai and Guangdong These managers answered all the survey items and provided feedback about the clarity of the survey questions and instructions and the appropriateness of the terminologies used Fourth, from this pretest, we refined the questionnaire and finalized the survey

For the formal survey, we selected a random sample of 500 firms from a list of high-tech firms in Beijing, Shanghai, and Guangdong, compiled by a business research firm from the Beijing, Shanghai, and Guangdong High-Tech Enterprises Directories. The pretest generated high interrater reliability (all r > .70), so we employed a key informant approach (one senior manager from each firm) to reduce survey costs. We recruited experienced interviewers to conduct on-site interviews. The interviewers first called a manager to set up an appointment and then presented the questionnaire at the scheduled time in the manager's office and collected the survey after its completion. Compared with a traditional mail survey, this method is more effective for generating valid information and high-quality data because it ensures both access to the right respondents and correct understanding of the survey questions (Zhou, Yim, and Tse 2005).

In total, we obtained 241 usable questionnaires, for a response rate of 48.2%. A comparison of participating and nonparticipating firms indicated no significant differences in key firm characteristics, such as age, number of employees, and sales, so nonresponse bias did not appear to be a concern. The sample covered a broad spectrum of industries, firm scales, and ownership structures (see Table 1).

As a validity and quality check, we gathered information regarding the number of years the respondents had worked in the industry and for their firm, their position, and their level of familiarity with the firm. On average, the informants had worked in their industry for 8.6 years and at their firm for 5.5 years. Their positions included chief executive officer or general manager (17.0%), senior marketing manager or director (32.4%), senior project manager or director (14.5%), and other senior-level managers. The mean of familiarity with the firm reached 5.92 (out of 7), comparable to similar previous studies (Rindfleisch and Moorman 2001), and indicated that the respondents were knowledgeable informants.

TABLE 1
Profiles of the Sample Companies (N = 241)

Sample Characteristics	Frequency	%
Industry		
Computer equipments	10	4.15
Electronics engineering	36	14.94
Computer software	43	17.84
Telecommunication equipments	13	5.39
Internet technology	22	9.13
Biology and pharmaceutical	32	13.28
New materials	10	4.15
Other	75	31.12
Geographic Location		
Beijing	87	36.10
Guangdong	84	34.85
Shanghai	70	29.05
Ownership		
State owned	10	4.1
Private	115	47.7
International joint venture	29	12.0
Foreign wholly owned	30	12.4
Other	57	23.8
Number of Employees		
<100	76	31.54
200–299	28	11.62
300–499	36	14.94
500–999	26	10.79
>1000	29	12.03
Annual Sales (in Millions of RMB)		
<10	31	12.86
10–49	66	27.39
50–99	63	26.14
100–199	35	14.52
>200	45	19.09

Measures

We operationalized the key constructs using both reflective and formative measures. Because of the direction of causality between the latent construct and the observed indicators (Jarvis, MacKenzie, and Podsakoff 2003), we treated business ties and government support as formative indexes, whereas we treated political ties, enforcement inefficiency, technological turbulence, demand uncertainty, and performance as reflective. The measurement items appear in the Appendix.

We adapted the measure of business ties from Dubini and Aldrich (1991) and Peng and Luo (2000). The scale captures the extent to which firm executives have good connections (*guanxi* in Chinese) with various market players, including suppliers, buyers, and competitors, as well as marketing-based and technological collaborators. As our in-depth interviews reveal, a "good connection" is a well-understood concept in Chinese society that is based on personal interactions and social relationships. We treated business ties as a formative index because its indicators capture different facets and may not be highly correlated.

We adapted the measure of political ties from previous studies (Li and Zhang 2007; Peng and Luo 2000; Xin and Pearce 1996). It consists of four items that reflect the relationships between the firm and government officials at various levels of government, such as tax and administration bureaus. Although political ties are structurally parallel to business ties in the conceptual model, its measure is reflective because of the content and meaning of the scale items. All items measure the extent to which managers have developed and maintained good social connections (i.e., *guanxi*) with government officials.

We derived the measure of the institutional environment from Li and Atuahene-Gima (2001). The scale assesses enforcement inefficiency as the extent to which unlawful behaviors, such as piracy and counterfeiting, and unfair competitive practices pervade the marketplace. Although laws and regulations exist, their enforcement is problematic. For example, China has intellectual property laws and piracy is illegal, but antipiracy enforcement varies significantly across regions.

We used a five-item formative scale to measure government support in terms of implementing beneficial policies and programs, providing technology and market information, and facilitating business transactions for all the firms. These indicators capture different facets, for example, a government may provide firms with beneficial policies but not sufficient financial support, so we treated it as a formative scale

We adapted the measures of technological turbulence and demand uncertainty from Jaworski and Kohli (1993) The four technological turbulence items evaluate the extent to which technology in the industry is changing The three demand uncertainty items address the extent to which customers' product demands and preferences are changing rapidly, as well as the difficulty of predicting these changes

We adapted the measure of firm performance from Li and Zhang (2007) and Zhou, Yim, and Tse (2005) The measure assesses firm performance with regard to returns on investment, sales growth rate, market share growth, and the growth rate of its profit relative to its major competitors in the same industry

We considered several control variables firm age, size, and foreign or domestic ownership, as well as the level of experience of the respondents and their familiarity with the firm New organizations may suffer from the liability of newness and lack external networking ties We measured firm age as the number of years the firm has been in operation To prevent skewness, we measured firm size as the natural logarithm of the number of employees of the firm We classified international joint ventures and foreign wholly owned firms as foreign (coded as 1) and others as domestic (coded as 0) We used tenure with the firm to measure respondents' experience and a self-reported scale to measure their familiarity with the firm

Construct Validity

Conventional factor and internal consistency analyses are not appropriate to assess composite constructs with formative indicators (Diamantopoulos and Winklhofer 2001, Jarvis, MacKenzie, and Podsakoff 2003) Therefore, we followed the four steps that Diamantopoulos and Winklhofer (2001) suggest to ensure successful index construction content specification, indicator specification, indicator collinearity test, and external validity test

To specify the scope of the formative variables, we conducted an extensive review of network literature and in-depth interviews with 12 senior managers to specify the domain of the content of business ties and government support, as indicated in the Appendix To assess the suitability of the two formative scales, we checked for multicollinearity among the indicators Because a formative measurement model is based on a multiple regression, each indicator should have a unique influence on the latent variable, and high multicollinearity would render assessments of the indicator validity problematic (Diamantopoulos and Winklhofer 2001) The maximum variance inflation factor is 2 36 for business ties and 1 96 for government support, far below the threshold of 10 0, so indicator multicollinearity is not a concern

We assessed external validity by examining the theoretical relationships of the formative scales to other constructs in the nomological network A positive relationship between business ties and firm performance already has been established (Peng and Luo 2000), and we confirmed that business ties were significantly correlated with firm performance ($r = 38$, $p < 01$) Moreover, each individual indicator of business ties was significantly correlated with firm performance ($r = 25$– 58, $p < 01$), which collectively suggests the external validity of their indicators Extant literature also suggests a positive relationship between government support and firm performance (Li and Atuahene-Gima 2001), which is also evident in this study ($r = 24$, $p < 01$) However, one government support item was not correlated with firm performance ($r = 09$, $p = 17$), so we dropped it (Diamantopoulos and Winklhofer 2001)

For the reflective constructs, we assessed their reliability and validity with an overall confirmatory measurement model, in which each questionnaire item loads only on its respective latent construct and all latent constructs correlate The measurement model fit the data satisfactorily (goodness-of-fit index = 90, comparative fit index = 92, and root mean square error of approximation = 07), and all factor loadings were statistically significant ($p < 001$) The composite reliability of each construct measure exceeded the 70 threshold (see the Appendix) To assess discriminant validity, we ran chi-square difference tests for all the constructs in pairs to determine whether the constrained model (correlation fixed at 1) was significantly worse than the unconstrained model (correlation estimated freely) All the chi-square differences were highly significant (e g , technological turbulence versus demand uncertainty $\Delta\chi^2 = 7\ 79$, $p < 01$), in support of discriminant validity (Gerbing and Anderson 1988) For the formative scales, the largest correlation was 38 (business ties and performance), such that only 14 4% of the variance between the two measures was shared Overall, these results indicate that the measures possessed adequate reliability and construct validity

Common Method Bias

To assess the potential common method bias, we applied the "MV" marker method and used a scale theoretically unrelated to at least one scale in the analysis as the MV marker, which offered a proxy for common method variance (Lindell and Whitney 2001) We used a six-item scale that measured the conflict between the firm and its principal customer firm (Song, Dyer, and Thieme 2006) (Cronbach's $\alpha = 89$) and selected the lowest positive correlation ($r = 02$) between the MV marker and other variables to adjust the construct correlations and statistical significance (Lindell and Whitney 2001) None of the significant correlations became insignificant after adjustment (see Table 2) Therefore, common method bias was unlikely to be a serious concern

Analyses and Results

Because our model contains interaction effects between the ties and institutional and environmental factors, we ran moderated regression models to test our hypotheses To mitigate the potential threat of multicollinearity and clarify the interaction effects, we mean-centered each scale used to construct the interaction terms (Aiken and West 1991) In our model, government support is likely to be an endogenous factor because a firm with close political ties may perceive more government support According to Hamilton and Nickerson (2003), two- and three-stage methods can correct for endogeneity when both strategy (i e , business and political ties) and performance are continuous Therefore,

TABLE 2
Descriptive Statistics and Correlations

Variable	1	2	3	4	5	6	7
1 Firm performance		37**	07	13*	07	– 04	22**
2 Business ties	38**		30**	29**	21**	28**	23**
3 Political ties	09	31**		15**	16**	17**	35**
4 Technological turbulence	15*	30**	17**		53**	34**	27**
5 Demand uncertainty	09	23**	18**	54**		15**	16**
6 Enforcement inefficiency	– 02	29**	19**	35**	17**		21**
7 Government support	24**	25**	36**	28**	18**	23**	
8 MV marker (conflict)	09	– 04	– 05	14*	02	06	19**
M	4 76	23 38	4 79	4 69	4 55	4 65	17 45
SD	81	4 16	85	1 00	1 05	1 08	3 11

*$p < 05$
**$p < 01$
Notes N = 241 Zero-order correlations are below the diagonal, adjusted correlations for potential common method variance (Lindell and Whitney 2001) are above the diagonal

we tested our hypotheses with a three-stage hierarchical regression model (Slotegraaf, Moorman, and Inman 2003)

In Stage 1, we regressed government support on political ties to obtain residuals free of its influence, and then in Stages 2 and 3, we used the residuals as indicators of government support to construct its interaction terms with the other variables Stage 2 regressed performance against the residuals of government support, other predictors, and the controls, and Stage 3, the full model, added the interaction terms In addition, the model hypothesized eight interaction terms, and if all of them enter the model together in Stage 3, the potential for high correlations between interaction terms associated with the same variable (e g , business ties × enforcement inefficiency versus business ties × technological turbulence) may overinflate the standard error of the regression coefficient estimates and render them insignificant Therefore, we employed a blockwise hierarchical approach (McGrath 2001) and derived Models 1–4 in Table 3 The largest variance inflation factor in the full moderated regression models is 2 27, substantially less than the critical multicollinearity threshold of 10 0

As Table 3 shows, firm size has a significant effect on firm performance in Model 1 However, the control variables accounts for only 5% of the variance in firm performance In Model 2, adding the focal independent variables increases R-square by 19 ($p < 01$) The addition of the interaction terms in Models 3 and 4 also increases the R-square significantly compared with Model 2 ($\Delta R^2 = 08$, $p < 01$, $\Delta R^2 = 05$, $p < 05$, respectively), in support of the significant moderating effects of institutional and market environments

To investigate the moderating effects fully, we decomposed the significant interaction terms and compared the impact of business and political ties on firm performance at low and high levels of the moderating variables (Aiken and West 1991) We set the low levels of the moderating variables as one standard deviation below their mean scores and the high levels as one standard deviation above the means In Figure 2, we depict the effect of business and political ties on firm performance for low and high levels of the significant moderating variables

Business Versus Political Ties

As we show in Table 3, business ties are positively related to firm performance (Model 2, $\beta = 38$, $p < 01$), whereas political ties have no significant effect on it (Model 2, $\beta = -01$, n s) The t-test of the equality of these two coefficients ($t = 6\ 12$, $p < 01$) indicates that the coefficient of business ties is significantly greater than that of political ties, in support of H_1

Moderating Effects of Institutional Environment

In H_2, we consider the moderating role of enforcement inefficiency The interaction between business ties and enforcement inefficiency is positive and significant ($\beta = 20$, $p < 01$, see Table 3, Model 3), in support of H_{2a} Figure 2, Panel A, shows that business ties have a stronger positive effect on firm performance at high levels ($\beta = 11$, $p < 01$) than at low levels ($\beta = 06$, $p < 01$) of enforcement inefficiency The interaction between enforcement inefficiency and political ties is also significant ($\beta = 12$, $p < 05$), in support of H_{2b} Figure 2, Panel B, indicates a negative effect of political ties on firm performance at low levels of enforcement inefficiency ($\beta = -17$, $p = 04$) but a positive and insignificant effect at high levels ($\beta = 06$, $p = 35$)

H_3 predicts a negative moderating role of government support The interaction of government support and business ties is not significant ($\beta = 03$, n s , Table 3, Model 3), providing no support to H_{3a} A possible explanation may be that public information and resources obtained from the government cannot substitute for the market resources obtained from business ties, therefore, changes in government support do not alter the impact of business ties The interaction between government support and political ties is significant ($\beta = -23$, $p < 01$), in support of H_{3b} Figure 2, Panel C, shows that political ties have a positive effect on firm performance when government support is low ($\beta = 13$, $p = 01$) but a negative effect when government support is high ($\beta = -24$, $p < 01$)

Moderating Effects of Market Environment

As Model 4 in Table 3 shows, higher levels of technological turbulence strengthen the positive effect of business ties on

TABLE 3
Standardized Regression Estimates

		Model 1		Model 2		Model 3		Model 4	
		β	t-Value	β	t-Value	β	t-Value	β	t-Value
Direct Effects									
Business ties	H_1			38**	5 80	43**	6 74	36**	5 41
Political ties	H_1			– 01	– 11	– 06	– 98	01	24
Technological turbulence				08	1 02	12	1 61	05	74
Demand uncertainty				– 02	– 28	02	23	00	06
Enforcement inefficiency				– 22**	–3 41	– 15*	–2 26	– 18**	–2 76
Government support				19**	3 12	13*	2 06	16*	2 51
Moderating Effects									
Business ties × enforcement inefficiency	H_{2a}					20**	2 89		
Political ties × enforcement inefficiency	H_{2b}					12*	2 03		
Business ties × government support	H_{3a}					03	41		
Political ties × government support	H_{3b}					– 23**	–3 56		
Business ties × technological turbulence	H_{4a}							19*	2 26
Political ties × technological turbulence	H_{4b}							– 17*	–1 97
Business ties × demand uncertainty	H_{5a}							04	51
Political ties × demand uncertainty	H_{5b}							16	1 95
Control Variables									
Size		15*	2 31	14*	2 35	09	1 50	11	1 78
Age		09	1 21	05	77	03	55	04	56
Foreign–domestic		– 06	– 81	– 05	– 84	– 03	– 54	– 05	– 74
Experience of respondents		10	1 48	02	32	00	– 08	04	69
Respondents' familiarity		08	1 32	12*	2 03	10	1 76	11	1 84
R^2		05		24		32		29	
Adjusted R^2		03		20		28		24	
ΔR^2				19**		08**		05*	

*$p < 05$
**$p < 01$
Notes N = 241

firm performance (β = 19, $p < 05$), in support of H_{4a} Figure 2, Panel D, reveals that business ties have a stronger positive effect on firm performance when there is high (β = 10, $p = 00$) than when there is low (β = 04, $p = 06$) technological turbulence The interaction between technological turbulence and political ties is significant and negative (β = – 17, $p < 05$), in support of H_{4b} Figure 2, Panel E, further indicates that political ties have a positive effect on firm performance when technological turbulence is low (β = 15, $p = 04$) but a negative effect when technological turbulence is high (β = – 12, $p = 07$)

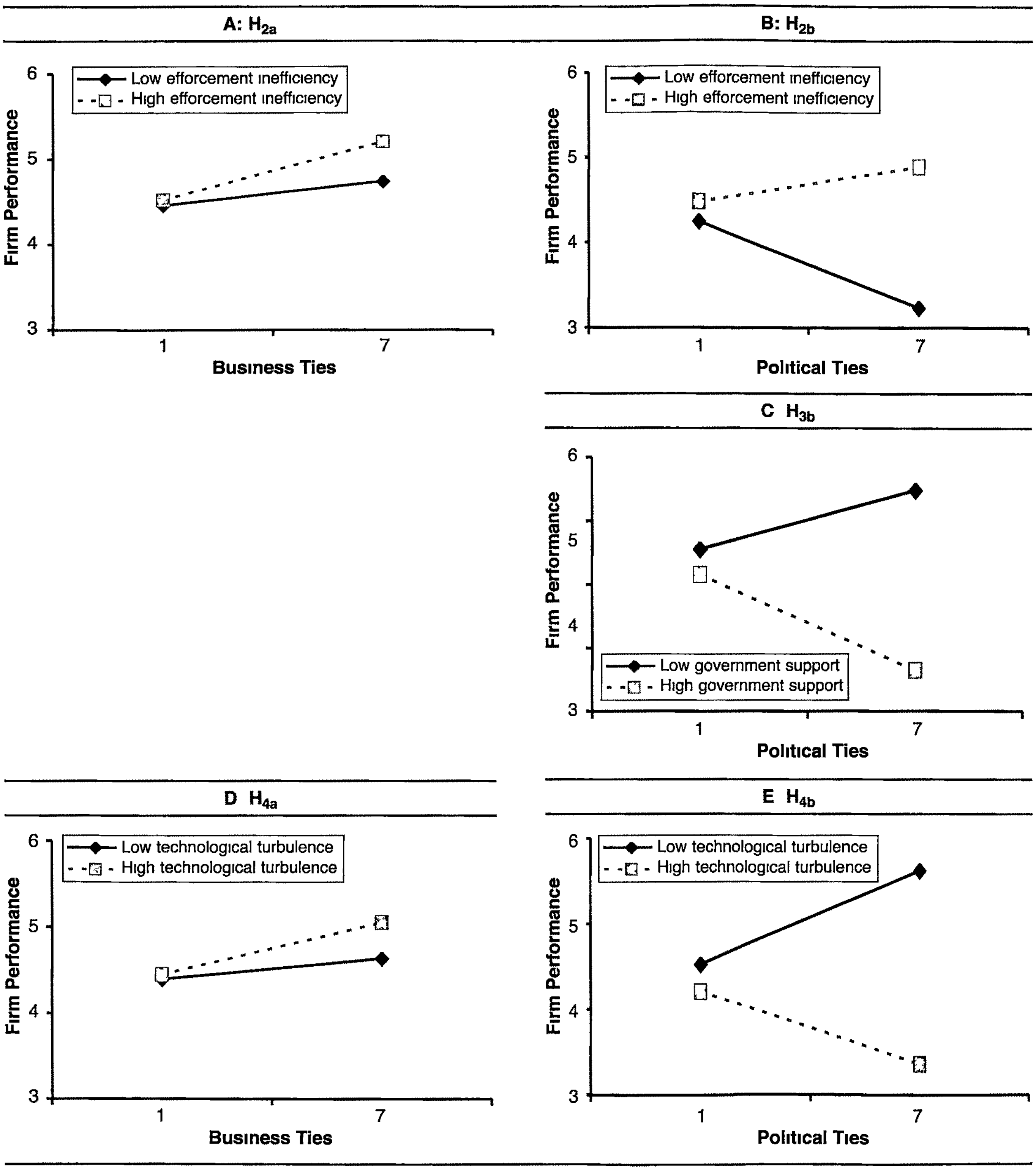
The interaction between demand uncertainty and business ties is not significant (β = 04, n s), so H_{5a} is not supported Network ties may create social obligations between existing parties that preclude a firm from exploiting new opportunities outside its current relations (Granovetter 1985), which cancel out the coordination efficiency of network ties in responding to fast-changing demand The interaction between demand uncertainty and political ties is not significant (β = 16, n s), providing no support to H_{5b} Some customer preference shifts may not involve structural industrial change, which would make industry information and government-controlled resources obtained from political ties still valuable

Discussion

Theoretical Contributions

Drawing on relational governance and institutional theories, this study investigates the role of social ties in China's emerging economy We find that business ties have a stronger positive effect overall on firm performance than political ties Moreover, our findings reveal that the effects of social ties are conditional on the institutional and market environments Therefore, this study makes several important theoretical contributions to marketing literature First, we enrich relational governance theory by distinguishing two types of social ties business and political This distinction is important because business and political ties capture two distinct facets of relational governance and provide access to different resources However, previous research

FIGURE 2
Interaction Effects



has largely focused on business ties (Gulati 2007), whereas political ties, an equally important connection in emerging economies, has received scant attention (Gu, Hung, and Tse 2008) We reason that with market resources and a long-term orientation, business ties should have a stronger performance impact than political ties, which provide regulatory resources and are short-term in nature The results confirm that business ties have a stronger effect on performance than political ties, which have no significant impact Our theoretical logic and empirical findings indicate that researchers must differentiate relational ties to explicate their role in emerging economies

Second, this study adds to relational governance theory by developing and testing an institutional contingent view of social ties (North 2005, Peng 2003) Extant research in marketing tends to treat institutions as a static "background," but the institutional differences that mark emerging economies require firms to adapt their strategies (Gu, Hung, and Tse 2008) Our study represents an initial attempt to assess how the role of ties depends on the institutional environment When courts cannot efficiently enforce exchanges, the legitimating effects of business ties are salient for deterring opportunistic behavior and boosting performance, yet such benefits decline when legal enforcement improves If the government does not support all firms, political ties enable individual firms to secure regulatory resources for their own benefits In contrast, if government support is strong and universally available, building and exploiting personal connections with government officials, which carries significant costs, is counterproductive

Equally noteworthy is the finding that business ties enhance but political ties inhibit performance when technologies change rapidly A rapidly changing technological environment propels companies to update their technologies and products to maintain their competitive position By offering information sharing and joint cooperation (Gulati 2007, Rindfleisch and Moorman 2001), business ties facilitate the acquisition and use of updated technology In contrast, government-controlled resources obtained from political ties are not directly linked to technological and absorptive capability and therefore cannot help firms deal with technological turbulence

Third, this study attempts to push marketing theory into the new, challenging context of China's emerging economy Emerging economies constitute a major growth opportunity, but marketing literature has paid relatively little attention to them (Johnson and Tellis 2008, Walters and Samiee 2003) This paucity of attention seriously limits the generalizability of marketing theory, which is based primarily on studies conducted in Western countries, typically the United States (Steenkamp 2005) Although our study provides only a snapshot of the current market and institutional environments, our findings, in combination with previous studies, can provide valuable insights for both research and practice in China

In their pioneering empirical work, Peng and Luo (2000 [data collected in 1996]) find that both business and political ties improve organizational performance Li and Zhang (2007 [data collected in 1997–1998]) reveal that political ties foster the performance of high-tech ventures Gu, Hung, and Tse (2008 [data collected in 2000]) show that, in general, *guanxi* has a positive impact on market performance Li, Poppo, and Zhou (2008 [data collected in 2003]) document the different effects of ties for domestic and foreign firms Our findings, based on data collected in 2008, suggest that business ties have a stronger impact on performance than political ties These cumulative findings imply that the role of political ties is declining as the institutional infrastructure improves, whereas business ties remain salient Because institutions (formal and informal) tend to change incrementally rather than discontinuously (North 2005), our results, together with previous findings, reveal a dynamic role of social ties in changing institutional environments

Managerial Implications

Our findings provide important implications for doing business in China First, marketers must distinguish between business and political ties and understand their distinct roles Conventional wisdom states that marketers should build connections with business partners and government officials, therefore, many Chinese firms have multiple political connections that they regard as strategic assets In 2007, approximately one-third of China's richest 800 entrepreneurs were official party members, and 38 were delegates to the National People's Congress, China's parliament (*Financial Times* 2007) However, our findings indicate that companies must be cautious about using political ties, which may not improve their performance or could even become a liability in certain institutional and market conditions Anecdotal evidence indicates that many of China's most lucrative ventures, which relied on political connections, eventually prompted criminal investigations of their founders' involvement in political scandals (*The Economist* 2009)

Second, uncertainty in the political system also may inhibit firm performance For example, during the Shanghai Social Security Fund fiasco in 2006, 72% of 137 publicly listed firms with government connections suffered –2 21% average cumulative abnormal returns in the stock market during the five days surrounding the disclosure of the scandal (Xu and Zhou 2008) These findings are surprising but understandable Since gaining entry into the World Trade Organization in 2001, China has been transitioning to a market economy, and the role of government has changed from guiding to facilitating economic activities In turn, marketing managers should refrain from political connections and instead rely more on business networks, which still can foster performance Consistent with our suggestion, ascendant Chinese professionals and entrepreneurs now rely more on networking among themselves (Balfour 2007)

Third, marketing managers should adapt their network building and utilization strategies to local institutional environments, which vary significantly across regions in China When legal enforcement is inefficient, the use of business ties effectively reduces unlawful behaviors and unfair competition When the government does not provide sufficient support to all organizations, firms can capitalize on their political connections However, if the institutional environment is well developed, managers should be cautious of using political ties

Fourth, marketers need to adjust their use of ties to reflect industrial uncertainty, such as technological turbulence When the industry is characterized by low levels of technological turbulence, the resources obtained from political ties, such as tax subsidies and project approval, can help firms build competitive advantages and achieve better performance For example, the real estate industry faces little technological turbulence and still relies heavily on resources controlled by the Chinese government, such as land and credit Thus, the Hong Kong billionaire Li Ka-shing used his political connections to obtain valuable licenses and permission to build huge real estate developments (Balfour 2007) In contrast, entrepreneurs in knowledge-intensive and turbulent industries, such as computer industries, may refuse political networking (Nee and Opper 2007) and instead rely on their business connections to obtain market resources, which should enhance their ability to weather technological turbulence

Finally, this study offers valuable implications for policy makers The ultimate goal of China's reform is to deregulate its economy and build a free and open market system However, because of the cultural tradition of using ties and the widely accepted premise that political ties are beneficial, political networks remain prevalent in practice Our findings show that these political ties may hurt firm performance when institutional environments improve and industries are characterized by rapid technological changes Therefore, policy makers should try to constrain governmental officials from developing close ties with business organizations The recently implemented position-rotating policy, which requires major government officials to change their positions across regions every two terms, indicates that the central government recognizes this goal, though the effectiveness of this policy is yet to be observed

Limitations and Further Research

This study has several limitations that further research should address First, the cross-sectional nature of our study limits tests of causal linkages in our model Because the role of ties may change during economic transitions, further research should undertake a longitudinal study to examine intriguing questions about their evolving roles Our quantitative approach also offers only limited insights into complex organizational processes in a dramatically changing environment Qualitative and interpretative approaches are necessary to gain a deeper understanding of how firms use their social ties in different market and institutional conditions

Second, our measure of ties is holistic and may not capture the relationships of all business partners, a network analysis with name and position generator approaches could help address this concern (Burt 1997) Because the concept of connections (*guanxi*) is so well known in China, our tie measures do not focus on the content of these relationships, however, the content and nature may vary for ties with different business partners or government officials in different administrative agencies and positions Additional research might conceptualize and measure social ties with different market players and government officials and examine their varying impacts on firm performance

Third, our sample is limited to firms in China Although emerging economies share some common features in their market and institutional environments, they vary remarkably in the stages of their economic and institutional development Moreover, social ties may contain different cultural constituents across countries, and their impact may depend on cultural contexts Therefore, we advise caution before generalizing the results of this study to other economies Political ties are not a unique feature of emerging economies, firms in developed countries, including the United States and Western European countries, are also politically connected (Faccio 2006) For example, the U S government is playing a highly salient role in the current financial crisis Existing literature in developed markets focuses primarily on business ties, but further examination of political ties in these economies would enrich relational governance theory

In this global era, firms must take advantage of the opportunities of emerging markets Cultivating social networks may help companies overcome market and institutional hurdles in China, but firms should adapt their business and political ties to the different institutional and market environments and exercise caution in their use of political ties in certain conditions We hope that further research continues to explore and document institutional changes, strategic choices, and their performance implications in emerging economies

Appendix
Measurement Scales

Construct and Source	Description	Factor Loadings
Business Ties (Dubini and Aldrich 1991, Peng and Luo 2000) Formative scale	Top managers at our firm have built good connections with managers at 1 Supplier firms 2 Customer firms 3 Competitor firms 4 Marketing-based collaborators 5 Technological collaborators	
Political Ties (Li and Zhang 2007, Peng and Luo 2000, Xin and Pearce 1996) CR = 88	1 Top managers at our firm have maintained good personal relationships with officials in various levels of government	96
	2 Top managers at our firm have developed good connections with officials in regulatory and supporting organizations such as tax bureaus, state banks, and commercial administration bureaus	1 00
	3 So far, our firm's relationship with regional government officials has been in a good shape	86
	4 Our firm has spent substantial resources in building relationships with government officials	85
Enforcement Inefficiency (Li and Atuahene-Gima 2001) CR = 80	1 Our industry has experienced some unlawful competitive practices such as illegal copying of new products, counterfeiting of our firm's own products and trademarks by other firms	94
	2 Our industry has experienced increased unfair competitive practices by other firms in the industry	1 00

Appendix
Continued

Construct and Source	Description	Factor Loadings
Government Support (Li and Atuahene-Gima 2001) Formative scale	In supporting local business, the government and its agencies have	
	1 Implemented policies and programs that have been beneficial to business operation	
	2 Provided needed technology information and other technical support	
	3 Provided important market information	
	4 Played a significant role in providing financial support	
	5 Helped firms obtain licenses for import of technology, manufacturing and raw material, and other equipment (dropped)	
Technological Turbulence (Jaworski and Kohli 1993) CR = 79	1 The technology in our industry is changing rapidly	1 00
	2 It is very difficult to forecast the technology development direction in our industry	78
	3 Most technological developments in our industry are radical changes on existing techniques	82
	4 The technological changes in our industry can bring many opportunities for firms	75
Demand Uncertainty (Jaworski and Kohli 1993) CR = 74	1 In our kind of business, customers' product demands and preferences change quite a bit over time	94
	2 Our customers tend to look for new products all the time	1 00
	3 It is difficult to predict changes of the market	67
Firm Performance (Li and Zhang 2007, Zhou, Yim, and Tse 2005) CR = 80	Our firm's overall performance compared with major competitors over the past year on	
	1 Sales growth rate	75
	2 Market share growth	88
	3 The growth rate of profit	93
	4 Return on investment	1 00
	(1 = "far below the competitors," and 7 = "far above the competitors")	

Notes All items, except as specifically indicated, use Likert scales (1 = "strongly disagree," and 7 = "strongly agree") CR = composite reliability

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V. Kumar, Eli Jones, Rajkumar Venkatesan, & Robert P. Leone

Is Market Orientation a Source of Sustainable Competitive Advantage or Simply the Cost of Competing?

The authors use panel data constructed from the responses of repeatedly surveyed top managers at 261 companies regarding their firm's market orientation, along with objective performance measures, to investigate the influence of market orientation on performance for a nine-year period from 1997 to 2005. The authors measure market orientation in 1997, 2001, and 2005 and estimate it in the interval between these measurement periods. The analyses indicate that market orientation has a positive effect on business performance in both the short and the long run. However, the sustained advantage in business performance from having a market orientation is greater for the firms that are early to develop a market orientation. These firms also gain more in sales and profit than firms that are late in developing a market orientation. Firms that adopt a market orientation may also realize additional benefit in the form of a lift in sales and profit due to a carryover effect. Market orientation should have a more pronounced effect on a firm's profit than sales because a market orientation focuses efforts on customer retention rather than on acquisition. Environmental turbulence and competitive intensity moderate the main effect of market orientation on business performance, but the moderating effects are greater in the 1990s than in the 2000s.

Keywords: market orientation, customer relationship management, longitudinal, sustainable competitive advantage, business performance

> As businesses become increasingly competitive, marketers must identify routes for improved measurement of [investments in marketing activities]. (Scase 2001, p. 1)

Dynamism in business environments caused by economic slowdown or growth, competitive intensity, globalization, mergers and acquisitions, and rapid-fire product and technological innovations challenges top managers' ability to sense and respond to market changes accurately. The inability to sense and respond to market changes quickly has led to the demise of many firms with household names, including Kmart and Circuit City. Therefore, it is critical that managers identify and understand strategic orientations that enable a firm to sustain performance, especially in the presence of rapid changes in market conditions.

The marketing concept that has existed for many years was one of the first strategic frameworks that provided firms with a sustainable competitive advantage (SCA). Academics first began recognizing and operationalizing the marketing concept as "market orientation" in the 1990s (Kohli and Jaworski 1990). During the past 20 years, hundreds of articles have been published on market orientation's effect on business performance (Kirca, Jayachandran, and Bearden 2005). However, few studies have investigated the longer-term benefits of market orientation (for exceptions, see Gebhardt, Carpenter, and Sherry 2006; Noble, Sinha, and Kumar 2002), and almost nothing has been published on this relationship using longitudinal data. This is an important gap because obtaining business sustainability remains a key concern for senior managers. Thus, a replication and extension of prior work is needed, using a longer horizon to validate the full extent of market orientation's time-varying effect on business performance. Therefore, in this study, we use existing measures from the literature to assess the performance of market orientation on long-term business performance. Our two specific questions are as follows: (1) Does market orientation create a source of SCA, or is it a requirement that companies face when competing in today's business environment? and (2) How much is gained, and how long can firms expect the advantages from developing a market orientation to hold?

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

Market Orientation and Long-Term Performance

The literature suggests that market orientation's primary objective is to deliver superior customer value, which is based on knowledge derived from customer and competitor analyses and the process by which this knowledge is gained and disseminated throughout the organization (e.g., Felton 1959; Narver and Slater 1990). A superior understanding of customer needs, competitive actions (i.e., industry structure and positional advantages), and market trends enables a market-oriented firm to identify and develop capabilities that are necessary for long-term performance (Day 1994). Investments in capabilities, such as active information acquisition through multiple channels (e.g., sales force, channel partners, suppliers), incorporation of the customer's voice into every aspect of the firm's activities, and rapid sharing and dissemination of knowledge of the firm's customers and competition, take time to provide returns. For example, investments in improving customer satisfaction affect firm performance through improved customer retention and profitability. However, these benefits from improving customer satisfaction are more likely to be observed in the long run than in the short run.

Market orientation is a capability and the principal cultural foundation of learning organizations (Deshpandé and Farley 1998; Slater and Narver 1995). Through constant acquisition of information regarding customers and competition and the sharing of this information within an organization, market-oriented firms are well positioned to develop an organizational memory, a key ingredient for developing a learning organization. Furthermore, a market orientation encourages a culture of experimentation and a focus on continuously improving the firm's process and systems. This implies that developing and improving on a firm's market orientation may make a firm's capabilities become more distinctive (relative to the competition) over the long run, resulting in SCA.

There are also reasons to believe that market orientation may not provide an SCA. First, a market orientation may lead a firm to narrowly focus its efforts on current customers and their stated needs (i.e., adaptive learning versus generative learning; Hamel and Prahlad 1994; Slater and Narver 1995). Such a narrow focus could lead to market-oriented firms not anticipating threats from nontraditional sources, thus restricting a market orientation's capability to provide an SCA. Second, and most important, a market orientation can provide long-term performance benefits if it is not imitable by the competition. Capabilities and processes are not imitable if they provide firms with tacit knowledge that enables them to understand customers' latent needs (Day 1994). However, such a tacit knowledge base is developed only if firms adopt a broader and more proactive approach to market orientation (Slater and Narver 1998). Finally, it is widely accepted that a firm's only sustainable advantage is its ability to learn and anticipate market trends faster than the competition (De Geus 1988).

Again, the majority of the published empirical support for the benefits of market orientation is based on cross-sectional databases. Therefore, our knowledge is limited to market orientation's influences on static measures of performance. Cross-sectional databases cannot control for potentially unobservable, firm-specific effects and cannot uncover the time-varying effects of market orientation. For example, Gauzente (2001) suggests that there are three aspects of time that affect market orientation and its impact on performance: (1) lagged, (2) threshold, and (3) cumulative effects. Therefore, empirical studies examining market orientation's influence on business performance over time would provide a more complete view of the benefits associated with developing and improving a market orientation. The few longitudinal studies that exist show no long-term relationship between market orientation and return on investment, which indicates that a market orientation may be too costly and that the returns are not large enough to justify the cost of implementation (Narver, Jacobson, and Slater 1999).

In summary, the ability of market orientation to provide an SCA is still unresolved, because the evolutionary nature of a market orientation–performance relationship has not been satisfactorily addressed. In this study, we treat a market orientation–performance relationship more realistically and more fully as an unfolding process rather than a discrete event. Our longitudinal study design enables us to provide further insights into the dynamic nature of market orientation's effect on business performance.

Effect of Competition

Prior theoretical and empirical research has investigated the effect of market orientation of a firm independent of the orientation of the competitors in the industry. Thus, a fundamental question regarding market orientation still remains unanswered: Does a market orientation still provide a competitive advantage if the firm's competitors are also market oriented? In other words, as more firms in an industry become market oriented, does a firm's market orientation transform from being a success provider to being a failure preventer? That is, do moderate or high levels of effort to maintain a market orientation only prevent failure and not necessarily improve performance (Varadarajan 1985)?

Related to this, firms investing in developing a market orientation want to know the advantages obtained from being the first to adopt a market orientation in an industry. Early adopters of market orientation can obtain insights into customer needs before the competition. Responding to these customer insights through the development of product or service innovations can provide firms with improved business performance. However, rarely is a product or service safe from imitation by competition. Furthermore, competitors can develop their own system and culture of being market oriented and can potentially change the market structure as well. For example, pharmaceutical companies derive competitive advantages while their products are under exclusive patents, which provides them lead time in developing SCA while they recoup research-and-development costs. However, competitors often develop and patent "similar" formularies, which could lead to industry equilibrium. An example in the technology industry is the competition between IBM and Hewlett-Packard. Although IBM pioneered the concept of a single firm providing hardware, software, and services, which provided lead time in developing an SCA, Hewlett-Packard matched this concept eventually and surpassed IBM in becoming the largest information technology firm in the world

Using a unique panel data set obtained from (1) repeated surveys of top managers regarding their market orientation and (2) objective measures of business performance, we provide empirical evidence for first-adopter advantages with regard to developing a market orientation Our study offers new insights at a critical time in business history by more fully explicating market orientation's influence on business performance We examine the business performance–market orientation relationship and investigate whether it has changed over the 1997–2005 period This gives us a view of the short-term and long-term effects of having a market orientation It also enables us to determine whether these effects have changed over the nine years under study In this study, we refer to the effect of market orientation in a particular year on business performance in that year (i e , the current or contemporaneous effect) as the short-term effect of market orientation The long-term effect refers to the cumulated effect of market orientation from the prior years on business performance in a particular year and includes the current period's effect of market orientation

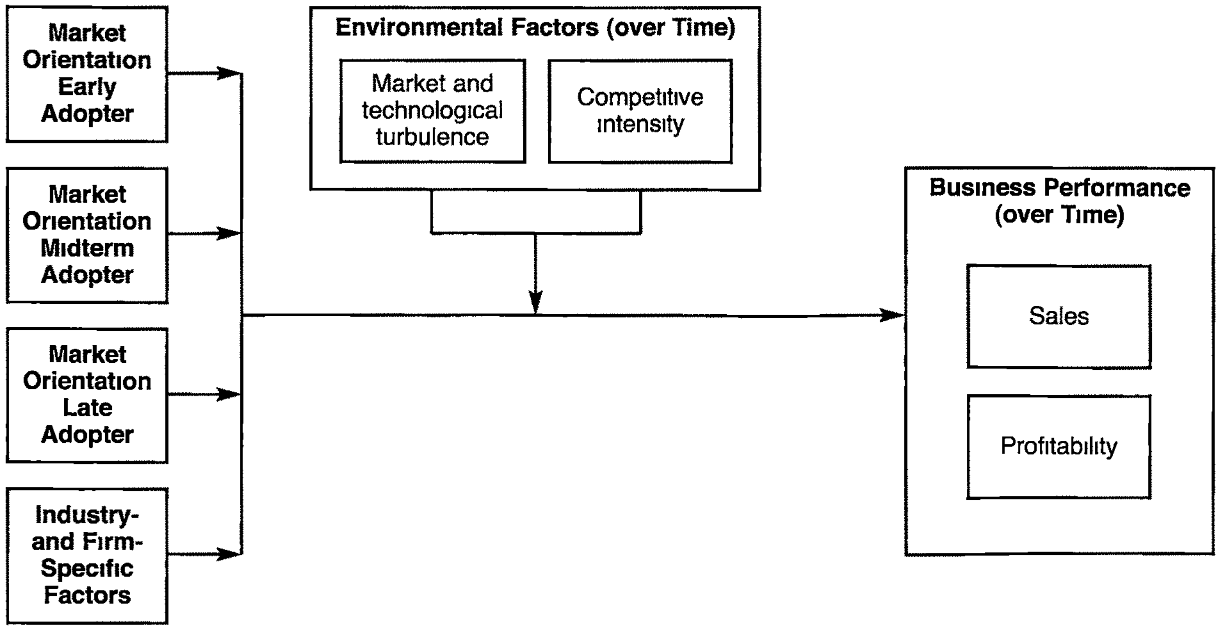
To be consistent with prior studies and avoid model misspecification, we also include environmental variables (turbulence and competitive intensity) as moderators of the relationship between market orientation and business performance, and we examine these effects over a longer period than prior studies Including the environmental moderators enables us to evaluate whether market orientation is a source of SCA when rapid changes occur in market conditions As Figure 1 illustrates, use of these panel data pertaining to market orientation, environmental moderators, and business performance enables us to assess the evolving nature of market orientation on business performance Figure 1 depicts the relationships that we test in this study

Our analyses indicate that market orientation had a positive effect on business performance in both the short and the long run However, the sustained advantage in business performance from having a market orientation was greater for the first (early) adopters in an industry The firms that were early to develop a market orientation gained more in sales and profit than firms that were late to develop a market orientation Furthermore, firms that adopted a market orientation early also realized the benefit of a bonus in the form of a lift in sales and profit due to a carryover effect that lasted up to three periods By computing measures of elasticity, it is possible to assess whether market orientation has a more pronounced effect on a firm's profit than sales Because market orientation focuses a firm's efforts on customer retention rather than on acquisition, market orientation should give a greater lift to profit than to sales Environmental turbulence and competitive intensity moderated the main effect of market orientation on business performance, but the moderating effect was greater in the 1990s than in the 2000s

Devoting resources to market orientation can be a costly and slow process Thus, in addition to testing theory, the research findings are useful to managers who are reevaluating their decision to continue investing in building market-oriented organizations A long-term view reinforces the impact of implementing and maintaining a market orientation on sustained improvements in business performance Our study contributes to the literature by evaluating, for the first time, (1) the long-term effects of market orientation on sales and profit, (2) the effect of competition over time on

FIGURE 1

Market Orientation on Business Performance over Time: Main and Contingent Effects


Market Orientation Early Adopter
Market Orientation Midterm Adopter
Market Orientation Late Adopter
Industry- and Firm-Specific Factors
Environmental Factors (over Time)
Market and technological turbulence
Competitive intensity
Business Performance (over Time)
Sales
Profitability

the relationship between market orientation and a firm's business performance, and (3) the time-varying effects of the previously studied moderators on a market orientation–business performance relationship In the sections that follow, we review the existing literature, propose and test hypotheses arising from our review, discuss the empirical findings, and state several managerial implications

Conceptual Background and Hypotheses

Market Orientation as a Potential Source of SCA

Market orientation is the generation and dissemination of organizationwide information and the appropriate responses related to customer needs and preferences and the competition (Kohli and Jaworski 1990) A market orientation positions an organization for better performance because top management and other employees have both information on customers' implicit and expressed needs and competitors' strengths and a strong motivation to achieve superior customer satisfaction (e g , Pelham 1997) These capabilities can be transformed into an SCA when a firm uniquely has the information and uses the market information efficiently and effectively as part of a process During the past few years, organizations have embraced a market orientation concept and its purported benefits, which has created an intensely competitive landscape What happens, then, when the competition is also market oriented? It is important to note that though several valid operationalizations of market orientation exist (for details, see Deshpandé, Farley, and Webster 1998), we follow the capabilities-based definition that Jaworski and Kohli (1993) propose

Empirical Evidence of a Market Orientation–Business Performance Link

Main effects Prior research has illustrated that a high degree of market orientation in an organization leads to short-term improvements in sales and profitability growth, market share, new product success, customer satisfaction, and return on assets, compared with other organizations that are not as highly market oriented (Deshpandé, Farley, and Webster 1993, Jaworski and Kohli 1993, Slater and Narver 1994) At the same time, market orientation is not associated with superior performance after a crisis (Grewal and Tansuhaj 2001), in the theater industry (Voss and Voss 2000), and in the retail industry (Noble, Sinha, and Kumar 2002)

The vast literature regarding the positional advantages of first (early) adopters and the capabilities of later entrants is relevant to our study Organizational innovations such as market orientation provide more durable cost and differentiation advantages than product or process innovations (Lieberman and Montgomery 1988) Firms that are first to adopt a market orientation tend to be more capable of identifying customer needs that are unmet in their industry and respond by developing new products or services They may also enjoy greater elasticity from their marketing efforts because there is less clutter for the new products or services, providing a cost advantage for the pioneering market-oriented firm Over time, the acquired customers develop switching costs, which lead to higher customer retention and a differential advantage for the pioneering market-oriented firm (Kerin, Varadarajan, and Peterson 1992)

However, a market orientation may also provide a competitive advantage only as long as this capability is distinct in the market The pioneering market-oriented firm's competitive advantage is ultimately contingent on its other skills and resources (e g , distribution capability, research-and-development expertise), the competitors' strategy, and changes in the environment (Lieberman and Montgomery 1990) Firms that are later adopters of market orientation can also learn from the pioneer's mistakes and therefore be more effective and efficient in (1) developing market-oriented capabilities in their organizations and (2) responding to customer needs

Market orientation is an ongoing effort, and firms can increase their level of market orientation in response to competition or later adopters of market orientation However, there is little guidance in the literature on whether threshold effects to being market oriented exist One view on market orientation is that firms may narrowly define existing customers as their served market, and in this case, a market orientation may be detrimental to the firm It is also possible that, over time, as other firms adopt a market orientation, market orientation transforms from being a success provider to being a failure preventer (Varadarajan 1985) In other words, there may be thresholds beyond which further focus on and improvements to market orientation do not provide corresponding returns in profit and sales This diminishing effect may also arise when customers begin to expect a certain level of product value and service quality from market-oriented firms This could lead to a reduced marginal effect of market orientation on business performance in the long run Therefore, balancing the positional advantages of the first (early) adopters of market orientation and the capabilities and efficiencies that are possible for later adopters, we propose the following

> H_1 The relationship between (a) market orientation and sales and (b) market orientation and profit is initially positive, but this effect decreases over time

Day and Wensley (1988) purport that investigating the moderating influence of the industry environment on a market orientation–performance relationship is of paramount importance, and thus marketing researchers have pursued external environmental factors and acknowledged that they can moderate market orientation's effect on business performance (Gatignon and Xuereb 1997, Greenley 1995, Grewal and Tansuhaj 2001, Han, Kim, and Srivastava 1998, Jaworski and Kohli 1993, Slater and Narver 1994, Voss and Voss 2000) Similar to the main effects, previous research has investigated only the short-term moderating effects of environmental factors on a market orientation–business performance relationship We extend prior literature by providing theoretical arguments for the effects of environmental conditions on a market orientation–performance relationship over time The moderators in our study follow the definitions that Jaworski and Kohli (1993) posit

Market orientation and market turbulence. Garnering knowledge from retained customers about their preferences (and needs) and maintaining a learning orientation are characteristics of market-oriented organizations. When marketers understand how much a given customer might be worth to the organization over time, they can tailor the product/service offering according to that customer's changing needs and requirements and still ensure an adequate lifetime return on investment (Berger et al. 2002). Therefore, market-oriented organizations are capable of better customer retention (Narver, Jacobson, and Slater 1999). These resources lead to better performance in the long run, especially in highly turbulent markets in which customer preferences are constantly changing.

Similar to the rationale for the main effects, we propose that as more firms become market oriented, the capability of a particular market-oriented organization is no longer unique, because customers begin to expect a certain quality of products and services from market-oriented firms. Furthermore, the benefit market-oriented firms obtain in turbulent markets is diminished when competitors are also market oriented. Together, these effects lead to a diminishing effect of market orientation on business performance over time. As more firms in an industry become market oriented, each of them is capable of delivering value and retaining customers even when the customers' needs are constantly changing. Economic theory has found similar "stability in competition" effects over time as markets reach equilibrium (Hotelling 1929). Therefore, the moderating effect of market turbulence is diminished over time. Although a market-oriented firm still has better performance in markets with greater turbulence than those that are more stable, this incremental benefit decreases over time. Thus,

> H_2: Market turbulence positively moderates the relationship between (a) market orientation and sales and (b) market orientation and profit, but this positive moderating effect diminishes over time.

Market orientation and technological turbulence. On the basis of the theoretical arguments advanced in prior research, we hypothesize that, initially (i.e., in the 1990s), a high level of technological turbulence diminished the influence of market orientation on growth in sales and profit. In markets with high technological turbulence, the characteristics of products and services are largely determined by innovations both within and outside the industry. In such cases, a learning orientation and knowledge about customer preferences do not necessarily contribute initially to long-term performance. Before the late entrants also become market oriented, technological turbulence is especially disadvantageous for the early adopters of market orientation because the other firms are more receptive to technological trends than market-oriented firms (Slater and Narver 1994). However, as more firms become market oriented in an industry, both the early and the late adopters are equally disadvantaged in markets with high levels of technological turbulence. Although market-oriented firms perform worse in markets with high technological turbulence than in those with less volatility in technology, the disadvantage diminishes over time. Thus,

> H_3: Technological turbulence negatively moderates the relationship between (a) market orientation and sales and (b) market orientation and profit, but this negative moderating effect diminishes over time.

Market orientation and competitive intensity. In the absence of competition, customers are "stuck" with an organization's products and services. In contrast, under conditions of high competitive intensity, customers have many alternative options to satisfy their needs and requirements. Over time, however, competitive intensity can enhance the effects of market orientation on performance as market-oriented firms in the same industry increase their capabilities and processes (e.g., optimal resource allocation) to retain key customers. In effect, this creates quasi "barriers to entry" for other competing firms that are not market oriented. Highly market-oriented firms are also uniquely capable of responding to and preempting competitive threats in a timely manner, which facilitates the attainment of higher sales and profit. Thus, in highly competitive markets, the companies with a greater market orientation are capable of better performance.

However, the moderating effect of competitive intensity decreases as more firms in an industry become market oriented. In other words, the incremental benefit of being an early adopter of market orientation decreases over time. When the late entrants also become market oriented, every firm is capable of understanding the strengths of its competition and anticipating competitive moves. This enables each firm to provide differentiated value to its customers, thus ensuring customer retention and profitability. This notion implies that a high degree of competition equally benefits all the firms in the industry. Therefore, the moderating effect of competitive intensity should decrease over time. Thus,

> H_4: Competitive intensity positively moderates the relationship between (a) market orientation and sales and (b) market orientation and profit, but this positive moderating effect diminishes over time.

We submit these hypotheses to empirical tests using panel data analytics on data gathered through multiple sources. We used subjective and objective data to uncover the effects of market orientation levels on short- and long-term sales and profit.

Methodology

Measures

Market orientation and environmental moderators. We measured market orientation and environmental moderators using the scales Jaworski and Kohli (1993) developed. For each component, we used the mean value of all the items listed under the respective component for the analyses.

Business performance. Our study includes sales and net income in a single study. Often, firms exhibit differential effects on these two performance measures. We obtained the objective measures of sales and net income (pure profit after sales) from multiple sources, including annual reports, publications, such as *Beverage World* and *The Wall Street*

Journal, and industry reports We also obtained subjective measures of performance on both net income and sales from the responding firms Following Jaworski and Kohli's (1993) approach, we measured subjective performance on a five-point scale ranging from "excellent" to "poor" The items we used to measure subjective performance include "Your overall performance of the firm/business unit with respect to net income in the year was?" and "Your overall performance of the firm/business unit relative to major competitors with respect to net income in the year was?" (we used similar items for sales)

Survey Methodology

We conducted the study with data obtained from three waves of surveys We conducted Survey 1 (1997) at the beginning of the study to obtain data for the measures in the short run We conducted Survey 2 (2001) four years later to obtain data for the same measures in the medium run Finally, we conducted Survey 3 (2005) eight years later to obtain data for the same measures in the long run In other words, over a nine-year period, we collected three sets of measures at intervals of four years

Survey 1 We designed a sampling plan that allowed top managers from different organizational environments to respond to questions regarding their perceptions of market orientation in their respective organizations, competitive intensity, and environmental turbulence in their respective industries We conducted interviews with the chief executive officer, president, or vice president and the head of the marketing group of each company, that is, we solicited two responses from each organization one response from the organization's top executive and the other from the head of the marketing group We obtained the responses to the survey in a multistep process First, we made an appointment by calling the top managers of each firm, and second, we obtained permission to fax the questionnaire Finally, we made another appointment to conduct the actual interview over the telephone Approximately 10% of the executives faxed the surveys back, indicating they lacked the time to participate in the process

We conducted the first survey during the third quarter of 1997[1] We obtained usable responses from the top managers in 300 organizations nationwide from a total of 1000 publicly listed organizations contacted, for an effective response rate of 30%[2] We selected the industries in accordance with Standard Industrialization Classification (SIC) codes, these include manufacturers (33%), distributors (9%), retailers (16%), service industries (30%), and other (12%) We compared the responses from the first 80% with the responses from the last 20% of respondents to check for any differences in the response pattern We detected no significant differences, indicating that late-response bias did not affect the sample (Aaker et al 2010) We also performed the following set of analyses to test for any bias in our sample of responding firms First, we compared the mean sales of the firm in a SIC code with the mean sales of the responding firms and nonresponding firms We did not observe any significant difference in the statistical test for differences in the mean sales Second, we obtained the percentage of firms above and below the mean sales in a SIC code and compared it with the percentages in the respondent and nonrespondent samples The chi-square test showed no significant differences, indicating that there are no systematic differences between the respondent and the nonrespondent samples In designing the sampling frame for the study, we selected an equal number of firms from each industry category However, our responses do not follow a similar pattern To avoid any sample set response bias, we included industry category as a control variable in our model

Two responses were available for the 300 firms surveyed Correlations between the two responses range from 70 to 91 across all items The results reflect more than one person's opinion and yield reliability for the responses provided in a single firm Whenever results were available from two respondents from a single company, we used the average of their responses in our analyses (e g , Deshpandé, Farley, and Webster 1993, Jaworski and Kohli 1993)

Survey 2 We contacted the same 300 firms that provided the responses in the first survey to obtain the data in the second survey The procedure we adopted for obtaining the responses from the second survey was identical to that of the first survey[3] We again collected two responses (one from top management and the other from the head of marketing) from the organizations that responded to the first survey We conducted the second survey during the third quarter of 2001 We obtained responses for the same measures as in the first survey However, we also collected information about any major events (e g , if the firms either dropped their market orientation or adopted a market orientation) that took place in the period between the first and the second survey We asked the respondents, "Did your organization undertake a major shift in its cultural focus?" If they answered yes, we asked whether they "made efforts to orient their organizations toward/away from a market orientation " From all the responses we obtained in the second survey, for the purpose of the analysis, only 269 were usable

Survey 3 We contacted the same 269 firms that provided the responses in the second survey to obtain data in the third survey The procedure we adopted for obtaining the responses from the third survey was identical to that of the first and second surveys[4] We again collected two responses (one from top management and the other from the

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[1] After the end of fiscal year 1997

[2] In our survey, we included a question on the time since the organization adopted a market-oriented strategy In our sample, we included firms that indicated that it had been only a year or less since they initiated a market orientation

[3] To the extent possible, we obtained the responses in Survey 2 from the same respondents as in Survey 1 We obtained more than 70% of the responses from the same respondent in the organization When the respondent was not available during Survey 2, we approached the respondent with the same functional responsibilities

[4] To the extent possible, we obtained the responses in Survey 3 from the same respondents as in Survey 2 We obtained more than 75% of the responses from the same respondent in the organization When the respondent was not available during Survey 3, we approached the respondent with the same functional responsibilities

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head of marketing) from the organizations that responded to the first survey We conducted the third survey during the third quarter of 2005 We obtained responses for the same measures as in the first and second surveys However, we also collected information about any major events (e g , if the firms either dropped their market orientation or adopted a market orientation) that took place in the period between the second and the third survey We asked the respondents, "Did your organization undertake a major shift in its cultural focus?" If they answered yes, we asked whether they "made efforts to orient their organizations toward/away from a market orientation" From all the responses we obtained in the third survey, for the purpose of the analysis, only 261 were usable

The key premises of the hypotheses rest on the validity of the measures Therefore, we performed a factor analysis for all components of our measures The items for market orientation and the external moderators all loaded on their appropriate factors in both surveys We also conducted a reliability test for the items and found that all the items had a coefficient alpha greater than 70 We report the reliabilities of the items used in the survey in Table 1, and we report the descriptive statistics for the data collected in the surveys in Table 2

Model Specification[5]

As we mentioned previously, because of the complexity and costs associated with the data collection task, we collected

TABLE 1
Reliability Analysis

Market Orientation Component	Number of Items	Representative Items[a]	Cronbach's α 1997	Cronbach's α 2001	Cronbach's α 2005
Market turbulence	6	•In our kind of business, customers' product preferences change quite a bit over time •We are witnessing demand for our products and services from customers who never bought them before •We cater to much the same customers that we used to in the past	74	79	78
Technological turbulence	5	•The technology in our industry is cutthroat •A large number of new product ideas have been made possible through technological breakthroughs in our industry	87	85	88
Competitive intensity	6	•Competition in our industry is cutthroat •There are many promotion wars in our industry	77	79	76
Intelligence generation	10	•We meet with customers at least once a year to find out what products or services they will need in the future •We are slow to detect changes in our customers' product preferences •We periodically review the likely effect of changes in our business environment on customers	76	79	77
Intelligence dissemination	8	•We have interdepartmental meetings at least once a quarter to discuss market trends and developments •When something important happens to a major customer or market, the whole organization knows about it in a short period •When one department finds out something important about competitors, it is slow to alert other departments	86	88	89
Response design	7	•It takes us forever to decide how to respond to our competitor's price changes •Our business plans are driven more by technological advances than by market research •The product lines we sell depend more on internal politics than real market needs	81	84	83
Response implementation	7	•If a major competitor were to launch an intensive campaign, we would implement a response immediately •When we find out that customers are unhappy with the quality of our service, we take corrective action immediately	83	82	84

[a]The scale items in our study are sourced from Jaworski and Kohli (1993) We reproduce them here for illustrative purposes

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[5]We also tested the effect of the antecedents of market orientation (Kohli and Jaworski 1990) to avoid model misspecification This provided additional validity to the results we obtained in the study

TABLE 2
Descriptive Statistics

Variable	M	SD	Mdn	Minimum	Maximum
Market orientation$_{1997}$	3 03	1 08	2 61	1	5
Market orientation$_{2001}$	3 39	96	2 82	1	5
Market orientation$_{2005}$	3 88	88	3 64	1	5
Market turbulence$_{1997}$	3 52	91	3 38	1	5
Market turbulence$_{2001}$	3 47	84	3 26	1	5
Market turbulence$_{2005}$	3 38	79	3 21	1	5
Technological turbulence$_{1997}$	2 71	1 06	2 92	1	5
Technological turbulence$_{2001}$	2 62	1 14	2 78	1	5
Technological turbulence$_{2005}$	2 82	1 09	2 97	1	5
Competitive intensity$_{1997}$	2 93	76	2 85	1	5
Competitive intensity$_{2001}$	3 09	82	2 96	1	5
Competitive intensity$_{2005}$	3 11	72	3 02	1	5
Sales$_{1997}$ (millions of dollars)	614 4	252 8	581 2	52 7	1418 2
Sales$_{2001}$ (millions of dollars)	757 6	231 7	621 3	65 6	1695 5
Sales$_{2005}$ (millions of dollars)	811 3	219 8	668 4	78 2	1907 3
Profit$_{1997}$ (millions of dollars)	77 9	43 4	72 6	–36 7	184 6
Profit$_{2001}$ (millions of dollars)	86 8	41 2	77 3	–21 1	211 3
Profit$_{2005}$ (millions of dollars)	92 4	39 6	83 3	–24 4	231 8

the level of market orientation of the sampled firms through three waves of surveys conducted in 1997, 2001, and 2005 Therefore, given that information on the firms' business performance (sales and profit) is available from secondary sources on an annual basis from 1996 to 2006, we needed to interpolate values for market orientation (MO), market turbulence (MT), technological turbulence (TT), and competitive intensity (CI) between 1997 and 2001 and between 2001 and 2005 There are several ways this could be done (1) We could assume that there was a linear move from one observation to the next over the study periods, (2) we could assume that MO stayed at the same level and then moved to the next value in a step fashion, or (3) we could estimate the unobserved values of MO using a flexible function form that would allow for the possibility of both linear behavior or a nonlinear behavior in MO over the 1997–2005 period We report the results of the third option It makes no assumptions about the behavior Therefore, we estimated the following equation for MO, MT, TT, and CI and used it to estimate the values for the missing years

$$\text{(1)} \qquad MO_t = \gamma_0 + \gamma_1(t) + \gamma_2(t)^2 + \text{error}_t,$$

where t = 1 for 1997, t = 5 for 2001, and t = 9 for 2005 After we estimate Equation 1, we observe the value for the parameters in that equation With the known parameter values, we interpolate the values for MO_t, where t = 2, 3, 4, 6, 7, and 8, so by using these estimates along with the three actual observations (t = 1, 5, and 9), we now have a continuous set of values for MO_t from 1997 to 2005 We adopt a similar method for interpolating the values for MT, TT, and CI for the years in which the survey was not conducted We then used these estimated values for MO, MT, TT, and CI when t = 2, 3, 4, 6, 7, and 8, along with the actual values when t = 1, 5, and 9, in the following model of business performance, which allows the coefficient of MO, MT, TT, and CI to have time-varying effects on business performance (BP)

$$\begin{aligned}\text{(2)}\ BP_{jtk} = {} & \alpha_{0k} + \alpha_{1k}BP_{j(t-1)k} + \alpha_{2tk}MO_t + \alpha_{3tk}MT_t + \alpha_{4tk}TT_t \\ & + \alpha_{5tk}CI_t + \alpha_{6tk}(MO \times MT)_t + \alpha_{7tk}(MO \times TT)_t \\ & + \alpha_{8tk}(MO \times CI)_t + \zeta_{1k}\text{Industry Growth Rate}_t \\ & + \zeta_{2k}\text{Firm Size}_t + \zeta_{3k}GDP_t + \zeta_{4k}\text{Service} \\ & + \zeta_{5k}\text{Retailing and Distribution} + \zeta_{6k}\text{Manufacturing} \\ & + \omega_{tk} + \varepsilon_{jk} + \text{error}_{jtk},\end{aligned}$$

where

other industry = the base category for the three dummy variables representing the four industries,
k = 1 if sales is used as the dependent variable, and k = 2 if profit is used as the dependent measure,
MO = market orientation,
TT = technological turbulence,
MT = market turbulence,
CI = competitive intensity,
IGR = industry growth rate, and
BP_{jtk} = business performance at time t for industry j, where t = 1, 2, , 9

We use

$$\text{(3)} \qquad \alpha_{itk} = a_{ik} + b_{ik}\ln(\text{time}) + \delta_{ik}$$

to capture the time-varying effect of the key constructs, where i represents the coefficients for the variables associated with MO, MT, TT, and CI in the model For example, we can compute the coefficient for market orientation, MO_t, with the following equation

$$\begin{aligned}\text{(4)} \qquad \alpha_{2tk}(MO)_t &= [a_{2k} + b_{2k}\ln(t)]MO_t \\ &= a_{2k}MO_t + b_{2k}[\ln(t) \times MO_t] \\ &= a_{2k}(MO)_t + b_{2k}[\ln(t) \times MO_t],\end{aligned}$$

when t = 1, that is, for the first time in our data set, $\alpha_2(MO)_t = a_2(MO)_t$ because ln(t) = 0 when t = 1 For t > 1, the coefficient of $(MO)_t = 1$ increases at the rate of $b_2[\ln(t) \times MO_t]$

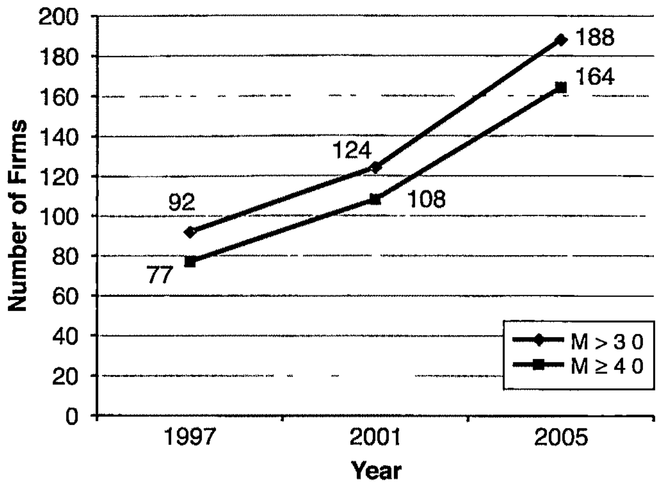
We estimate Equations 2 and 3 as a hierarchical linear model, but we estimate them jointly This model specification is a cross-section of time-series models. We modeled business performance at time t (BP_{jtk}) as a function of lagged business performance ($BP_{j(t-1)k}$) and the market orientation of the firm. In our model, the coefficient of MO_t (α_{2tk}) measures both the short-term (or instantaneous) effect of market orientation on business performance and the delayed effect. We hypothesize that the effect of market orientation diminishes over time as other competitors also become market oriented. We can make this inference because more firms in our data became market oriented over time in all the industries studied (see Figure 2). Therefore, we do not need to explicitly model industry fixed effects or the effect of the number of competitors that are market oriented in each period to assess changes in the effect of market orientation on business performance as the competition also becomes market oriented.

We also conducted the tests for moderator variables using the foregoing equations. We conducted the moderator tests for competitive intensity and environmental turbulence by analyzing the interaction effects of the corresponding variables with market orientation (Baron and Kenny 1986). The interpretation of the multiplicative interaction terms of the environmental variables is similar to the interpretation of the short-term and long-term effects of market orientation. We included industry growth rate, firm size, and industry category in our model as control variables to account for firm-specific effects (i.e., heterogeneity across firms) and to avoid model misspecification (Jacobson 1990).

Analyzing Cross-Sectional Time-Series Data

An alternative to the model structure we just described would be to estimate three separate cross-sectional regressions, using the data in 1997, 2001, and 2005 to capture the effect of market orientation on business performance. We would then compare the coefficients across these three cross-sectional regressions to observe the short-term effect of market orientation for early and late adopters of market orientation. Most of the studies to date in this area have adopted this approach and analyzed cross-sectional data, but only at a single point in time, not across multiple periods. Cross-sectional analyses have led to significant generalizations regarding the impact of explanatory variables on market orientation, but analyses based on cross-sectional and time-series (CS/TS) data (similar to the model structure proposed in Equation 1) may be even more fruitful given that they offer several advantages over only cross-sectional models.

FIGURE 2
Number of Firms Becoming Market Oriented over Time



First, using CS/TS data allows for the generalizability of results over time. In contrast, cross-sectional data provide only a "snapshot" specific to a given period. Inferences drawn from such data could be biased by idiosyncrasies associated with the specific period studied. Second, market orientation can change over time for a firm. Analysis of this important component of variation can be accomplished only by using CS/TS data. Third, CS/TS data increase the degrees of freedom available for estimation (analyzing n firms over t periods provides n observations versus n observations in cross-sectional analysis), thus enhancing the stability of parameter estimates. Fourth, analyzing CS/TS data affords a richer space of variation to estimate the parameters and possibly reduces the level of multicollinearity that might otherwise be present (Brobst and Gates 1977). Finally, the CS/TS data enable us to estimate the diminishing effects of market orientation more reliably because we have more data points on business performance. Before such pooled CS/TS data can be analyzed, the criteria for data homogeneity (i.e., pooling tests) must be fulfilled for the model form under consideration (Bass and Wittink 1975; Fuller and Battese 1974; Kumar and Leone 1988).

Data Homogeneity Test

Bass (1974) shows that incorrect inferences can be drawn in a cross-sectional regression analysis if data from heterogeneous firms/industries are pooled. Conceptually, the model in Equation 2 could be estimated using ordinary least squares regression at the firm level. This procedure would imply that the effect of each of the independent variables differs among firms (e.g., the regression coefficients for each variable are unique for each firm). It would also require estimating 32 parameters, which is not possible given the number of observations. If the 261 firms were grouped by their industry category—retailing and distribution (n = 87), manufacturing (n = 80), service (n = 90), and other (n = 4)—there would be more observations. However, doing so may still lead to inefficient estimates of the coefficients because of the number of parameters estimated in relation to the sample size. Given the CS/TS nature of these data and the lack of an a priori theoretical reason for the regression coefficients to differ across firms, pooling data across the 261 firms enables us to estimate the 35 parameters (32 plus 3 more for industry groups, with the base category being "other") with 2610 observations.

Bass and Wittink (1975) propose pooling tests to measure the constancy of the regression parameters across cross-sections, and we used their test to decide whether to pool the series. Because Brobst and Gates (1977) show that this test is biased toward rejecting the null hypothesis (H_0: pooling is appropriate), we chose a conservative alpha value of .01 for the test of statistical significance. If pooling is appropriate, the parameters can be estimated in various ways Most researchers reporting empirical work on sales response models in the marketing literature have simply stacked the cross-sections and estimated the parameters by using ordinary least squares regression However, pooled models can be estimated with procedures that allow both cross-sectional and time-series variations in the data through the specification of the error structure (Fuller and Battese 1974, Maddala 1971) Because we found pooling to be appropriate (the corresponding F-statistic was not significant, $p >$ 05), we used the Fuller–Battese procedure to estimate the pooled models Using the Fuller–Battese procedure involves specifying the error term in Equation 2 as a cross-sectional error term, a time-series error term, and a random error term

Results

Market Orientation and Business Performance

Model performance We report the results of our analyses with objective measures of performance as the dependent variable The adjusted R-square for the sales response model (1) with just the main effects is 42, (2) with main and interaction effects is 50, and (3) with main, interaction, covariates, and time-varying effects is 65 In other words, the adjusted R-square for the model investigating the influence of market orientation and external environmental moderators on sales is 65[6] The adjusted R-square of the model that included only the firm-specific effects (industry growth, firm size, and industry category) is 08 The reported coefficients are standardized values, we report these in Table 3 An analysis of residuals using the normal probability plot and White's (1980) test did not reveal any significant heteroskedasticity among the residuals In addition, the variance inflation factor did not exceed the recommended limit of 10, indicating that multicollinearity is not a serious threat to our analysis We observed similar results for the profit response model The adjusted R-square for the model investigating the influence of market orientation and external environmental moderators on profit is 66 The adjusted R-square of the model that included only the firm-specific effects (industry growth, firm size, and industry category) is 10 We also estimated the model with the maximum likelihood procedure and found similar results

Interpretation of coefficients The estimated coefficient of the main effect of market orientation in 1997 on sales in time t is positive and significant ($\alpha_{21} =$ 396, $p <$ 01)[7] Market orientation has a similar effect on firm profit The estimated coefficient of the main effect of market orientation in 1997 on profit in time t is positive and significant ($\alpha_{22} =$ 443, $p <$ 01) The parameter estimate for the time-varying effect of the coefficient of market orientation on sales is – 105 (b_{21}) for ln(time), as specified in Equation 3 Similarly, for the profit equation, the corresponding value is – 120 (b_{22}) In both these equations, the coefficient for ln(time) is significant ($p <$ 01) Therefore, we can conclude that H_{1a} and H_{1b} are statistically supported We show the diminishing effects of market orientation on sales and profit over time in Figure 3

We observe that market orientation in 1997 has a greater effect on business performance (for sales, $\alpha_{21} =$ 396, for profit, $\alpha_{22} =$ 443) than market orientation in the years that

TABLE 3
Effect of Market Orientation on Sales and Profit

Dependent Variable Sales$_t$	
Intercept	
Sales$_{t-1}$	305***
Market turbulence$_{1997}$	163***
Technological turbulence$_{1997}$	– 12**
Competitive intensity$_{1997}$	n s
Market orientation$_{1997}$	396***
(Market orientation × market turbulence)$_{1997}$	154***
(Market orientation × technological turbulence)$_{1997}$	– 207***
(Market orientation × competitive intensity)$_{1997}$	146***
Industry growth rate	185**
Firm size	217**
GDP	091*
Industry Category	
Services	147**
Retailer and distribution	121**
Manufacturing	107**
Dependent Variable: Profit$_t$	
Intercept	
Profit$_{t-1}$	334***
Market turbulence$_{1997}$	187***
Technological turbulence$_{1997}$	– 1**
Competitive intensity$_{1997}$	n s
Market orientation$_{1997}$	443***
(Market orientation × market turbulence)$_{1997}$	163***
(Market orientation × technological turbulence)$_{1997}$	– 148***
(Market orientation × competitive intensity)$_{1997}$	12***
Industry growth rate	208**
Firm size	226**
GDP	072*
Industry Category	
Services	131**
Retailer and distribution	128**
Manufacturing	093**

*$p <$ 10
**$p <$ 05
***$p <$ 01
Notes n s = not significant

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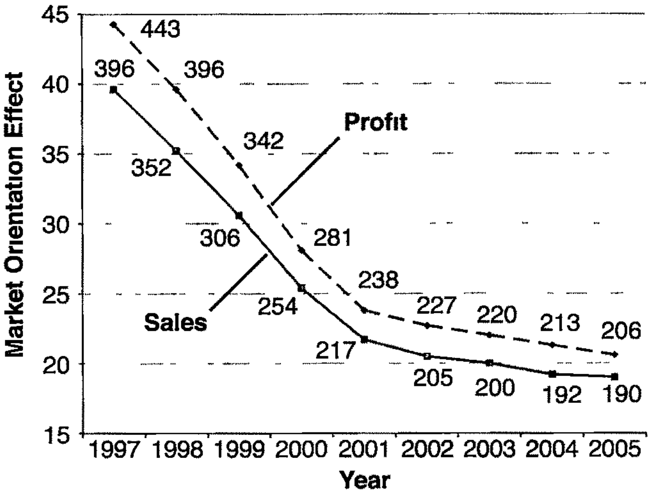
[6] The substantive conclusions of the study do not change when we use subjective dependent measures The correlation between objective and subjective measures of performance is approximately 8

[7] We observe the coefficients for market orientation on sales and profit to vary within 10% of what we report here for the two forms of interpolation of market orientation value The first option is a linear interpolation of missing market orientation values The second option assumes that market orientation stays at the previous value during the missing period and then moves to the new value in a step fashion We observe similar results for other variables, indicating the robustness of the findings

FIGURE 3
Diminishing Effect of Market Orientation on Sales and Profit



follow The effect of market orientation on sales decreases to 217 and 190 in 2001 and 2005, respectively Similarly, the effect of market orientation on profit decreases to 238 and 206 in 2001 and 2005, respectively The results also reveal that market orientation has a positive influence on sales and profit in both the short and the long run This implies that the same level of market orientation in 1997 had a greater impact on business performance than in subsequent years In other words, firms that were the first (early) adopters with regard to developing a market orientation experienced a greater impact from market orientation than those that adopted market orientation in later years Table 3 also shows that the lagged effect of sales (α_{11}) is equal to 305 and the lagged effect of profit (α_{12}) is equal to 334 This also implies that the influence of market orientation at any time t continues to have an influence on sales for three years, albeit at a diminishing rate The carryover effect of market orientation on profit is marginally greater than the carryover effect of market orientation on sales

Environmental Moderators

Because the coefficient of the interactions between market orientation and environmental moderators is significant, we do not interpret the main effects of the environmental factors The estimated coefficient of the interaction terms between market orientation and market turbulence in 1997 on sales at time t is positive and significant ($\alpha_{61} = 154$), and the corresponding effect on profit at time t is also positive and significant ($\alpha_{62} = 163$) This implies that the positive influence of market orientation on business performance in both the short and the long run is enhanced in markets with high market turbulence The moderating effect of market turbulence is greater in 1997 than in future years, indicating that as more firms become market oriented, a competitive advantage can diminish while still giving the lift in performance Through similar tests of significance (described previously) using the 95% confidence intervals for the parameter estimates, we observed support for all the remaining hypotheses in this study For example, the interaction effect between market orientation and market turbulence remains positive over the study period However, the magnitude of the coefficient for this interaction effect in 1997 is greater than in subsequent years Similar to a market orientation variable, we employ a time-varying parameter model and show that the effect of time (as captured by ln[time]) is significant for sales (– 042, $p < 05$) and profit (– 040, $p < 05$) These time-varying interaction term coefficients for market turbulence support H_{2a} and H_{2b}

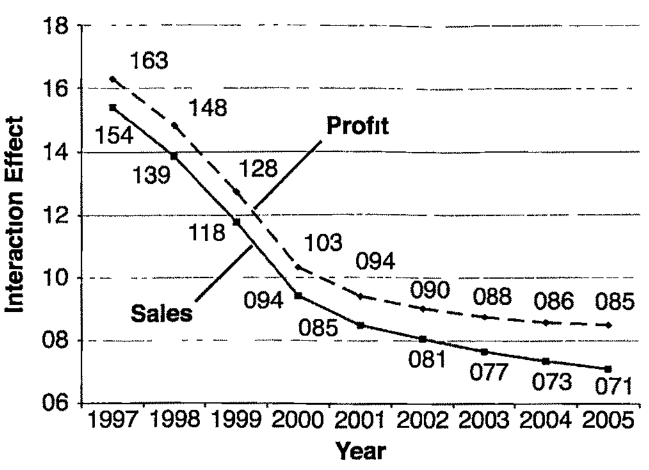
The estimated coefficient of the interaction terms between market orientation and technological turbulence in 1997 on sales is negative and significant ($\alpha_{71} = -207$, $p < 01$), and the corresponding effect on profit in time t is also negative and significant ($\alpha_{72} = -148$, $p < 01$) This implies that the positive influence of market orientation on business performance in both the short and the long run is diminished in markets with high technological turbulence Similar to market turbulence, the negative moderating effect of technological turbulence is also greater (after we consider the 95% confidence intervals of the parameter estimates) in 1997 than in future periods When we tested for the time-varying effect of this interaction, we find that the coefficient for time (as captured by ln[time]) is significant for sales (050, $p < 05$) and profit (031, $p < 05$) These time-varying interaction term coefficients for technological turbulence support H_{3a} and H_{3b}

The estimated coefficient of the interaction term between market orientation and competitive intensity in 1997 on sales in time t is positive and significant ($\alpha_{81} = 146$, $p < 01$), and the corresponding effect on profit in time t is also positive and significant ($\alpha_{82} = 12$, $p < 01$) This implies that the positive influence of market orientation on business performance in both the short and the long run is enhanced in markets with high competitive intensity The moderating effect of competitive intensity in 1997 is greater (after we consider the 95% confidence intervals of the parameter estimates) than the corresponding effect in subsequent years Again, we fit a time-varying parameter model for studying the effect of this interaction over time and find that the effect of time (as captured by ln[time]) is significant for sales (– 034, $p < 05$) and profit (– 026, $p < 05$) These time-varying interaction term coefficients for competitive intensity support H_{4a} and H_{4b} We show the diminishing effects of the interaction effects between market orientation and the moderators on sales and profit over time in Figure 4, Panels A–C

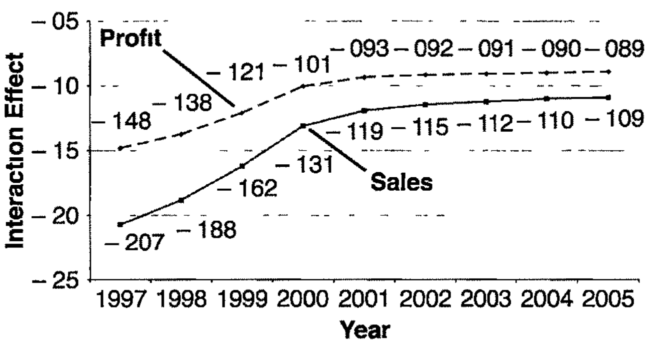
The coefficients of the industry-specific control variable, industry growth rate, on sales ($\zeta_{11} = 185$, $p < 01$) and profit ($\zeta_{12} = 208$, $p < 01$) are both positive and significant The industry category dummies are also positive and significant for both sales ($\zeta_{41\text{services}} = 147$, $p < 01$, $\zeta_{51\text{retailing and distribution}} = 121$, $p < 01$, and $\zeta_{61\text{manufacturing}} = 107$, $p < 01$) and profit ($\zeta_{42\text{services}} = 131$, $p < 01$, $\zeta_{52\text{retailing and distribution}} = 128$, $p < 01$, and $\zeta_{62\text{manufacturing}} = 093$, $p < 01$) These results reveal that industry-specific factors influence business performance Finally, the coefficients for the firm-specific control variable, firm size, on sales ($\zeta_{21} = 217$, $p < 01$) and profit ($\zeta_{22} = 226$, $p < 01$) are positive and significant, thus accommodating for firm-specific heterogeneity

FIGURE 4
Diminishing Interaction Effects Between Market Orientation and Moderators on Sales and Profit

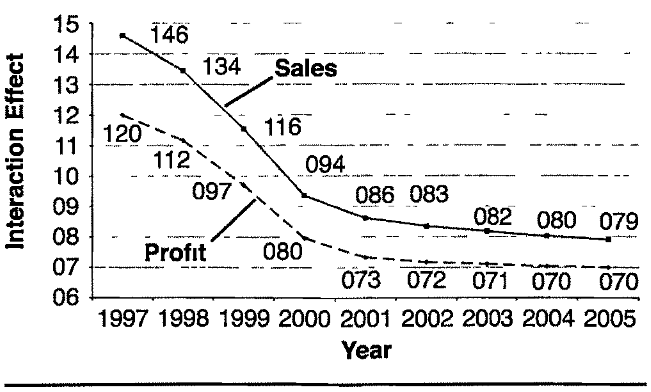
A: Market Orientation × Market Turbulence



B: Market Orientation × Technological Turbulence



C: Market Orientation × Competitive Intensity



The coefficient for the economic variable, GDP (gross domestic product), is positive and significant (ζ_{31} and ζ_{32} are 091 and 072 for sales and profit, respectively) We now discuss the implications of our findings in terms of relevance to the marketing literature and marketing practice

Discussion and Implications

To our knowledge, this is one of the first studies to examine the evolutionary nature of a market orientation–business performance relationship Using panel data across a large number of industries, we evaluate both the short- and the long-term effects The nine-year period covered by our panel data enables us to show that more companies became market oriented during this time and that market orientation had a positive influence on sales and profit in both the short and the long run (see Figure 2) More important, we show that though adopting a market orientation early was a source of unique competitive advantage for a firm (a success provider), it has now become a cost of doing business (a failure preventer) (Varadarajan 1985)

Environmental Moderators

Can a market orientation help organizations navigate through turbulent times? The results of our study suggest that it can Along with the demonstrated diminishing effects of market orientation on sales and profit, we found that environmental turbulence moderates the relationship between market orientation and performance in both the short and the long run Market turbulence strengthens the relationship between market orientation and sales and the relationship between market orientation and profit (in both the short and the long run), but this moderating effect diminishes over time This finding is in contrast with Kirca, Jayachandran, and Bearden's (2005) conclusion that market/environmental turbulence is not a significant moderator of the relationship between market orientation and performance

Technological turbulence weakens the relationship between market orientation and sales and between market orientation and profit (in both the short and the long run), but this moderating effect diminishes over time Competitive intensity strengthens the effect of market orientation on business performance in both the short and the long run In contrast with prior research (Jaworski and Kohli 1993, Slater and Narver 1994), the results reveal that competitive intensity is a moderator in a market orientation–business performance relationship The gains from better customer and competitive research intelligence among market-oriented firms in the presence of market turbulence and competitive intensity take time to improve business performance, and as more firms become market oriented, a competitive advantage can diminish under conditions of high technological turbulence Yet the positive influence of market orientation on business performance is enhanced under high competitive intensity Therefore, the failure to detect the effect of environmental moderators in prior research could be attributed to the omission of lagged effects

First (Early) Adopters of Market Orientation

The competitive advantage from having a market orientation is greater for the first (early) adopters in the industry Firms that are the first or early to develop a market orientation gain more in sales and profit than firms that are late to develop a market orientation Furthermore, firms that adopt a market orientation also realize the benefit of a bonus in the form of a sales and profit lift due to a carryover effect that lasts up to three periods Our study provides an important contribution to the literature on first-mover advantage The results reveal that early adopters with regard to implementing a market orientation strategy also enjoy similar benefits as first movers in terms of the introduction of a product or service innovation (Kerin, Varadarajan, and Peterson 1992) In other words, early adopters also enjoy competitive advantage in terms of the outputs (e g , product or service innovation), however, this benefit is evident for only three years We find that as competition also becomes market oriented, early entrants fail to enhance their competitive advantage from having a market orientation because the late adopters learn from the early adopters The diminishing effect lasting up to three periods provides another managerially relevant interpretation

Finally, comparing the main effect of market orientation on business performance, we find that market orientation has a greater influence on profit than sales in both the short and the long run The carryover effect of market orientation on profit is greater than the effect of market orientation on sales This implies that having a market orientation makes organizations focus more on retention than acquisition, and therefore profits increase much more than sales

Marketing Practice

The results show that the adoption of a market orientation is important in generating both sales and profit Given that the benefits of market orientation take time to become fully realized, the importance of top management both emphasizing and supporting a market-oriented culture is paramount (see Gebhardt, Carpenter, and Sherry 2006) Furthermore, because more companies have become market oriented during the past 15 years, being market oriented has become more of a failure preventer than a success producer (Varadarajan 1985) Indeed, it is the cost of doing business rather than a distinct characteristic and a specific source of SCA Companies must continue to raise the bar and not just maintain a certain level of market orientation to be successful, that is, to have a unique advantage, companies must continuously identify new dimensions of this construct to distinguish themselves An example of this is the number of companies that have incorporated a customer orientation (focus) into their organizations, thus adding to the dimensionality of market orientation As the United States continues to move from a product- to a service-dominated economy, companies will need to identify service-related dimensions of market orientation

Furthermore, given the globalization of brands and services, companies need to investigate how to incorporate multicultural dimensions into their general market orientation philosophy Another fruitful extension of a market orientation strategy would be augmenting the general strategic emphasis on customers, with a rigorous focus on profitable individual customer relationships and interactions, as interaction orientation suggests (Ramani and Kumar 2008) Moreover, recent work on internal marketing has provided some avenues for improvement in market orientation by examining the extent to which a firm's employee base holistically embraces its market orientation We expect that these firms would gain a differential advantage over firms that do not have high conformity among their employees

Regarding environmental turbulence, our results reveal that when a firm operates in a business environment of constant flux, a market orientation is especially critical for staying in tune with customers' preferences In other words, real-time market information generation and dissemination (e g , customer relationship management) is necessary However, with rapidly changing technology, the performance benefits of market orientation are more difficult to capture and keep

With respect to market orientation under highly competitive conditions, the results show that it is possible for market-oriented firms to achieve and protect gains in sales and profitability Perhaps a market orientation can facilitate proactive and reactive tactics, and all else being equal, firms can transform sales gains from their market orientation into higher profit over time The lagged dependent variable enables us to assess the carryover effect of market orientation We obtain the carryover effects of α_{2k} by sequential substitution of the coefficient of the lagged dependent variable (i e , α_{1k}) Thus, we observe that the effect of market orientation in a certain year has an influence on business performance for about three years, albeit at a diminishing rate Based on the magnitude of the respective coefficients, the carryover effect of market orientation on profit is marginally greater than the carryover effect of market orientation on sales However, the elasticity at each level of market orientation with respect to sales and profit must be computed to assess whether market orientation has a more pronounced effect on sales or profit

In summary, this study has direct theoretical and managerial implications related to previous research in this area Hunt and Morgan (1995) propose that organizations need to evaluate their relative performance continuously and use or acquire resources/skills to attain a comparative advantage Market orientation should be viewed as a resource for navigating through turbulent times In particular, we find that the benefits of market orientation are enhanced over time under intense competitive conditions, which lends support to Slater and Narver's (1994) encouragement to build and keep a market orientation

Limitations and Directions for Further Research

This study has limitations that can provide opportunities for further research We conclude that though market orientation has a diminishing effect on business performance, firms cannot afford to abandon it because it has become the cost of competing We do not assess the effectiveness of other business orientations, such as interaction orientation (Ramani and Kumar 2008), in improving business performance when the competition is market oriented Our longitudinal survey design enables us to evaluate the long-term and diminishing effects of adopting market orientation However, because of cost restrictions and managers' time requirements, we were able to conduct our survey only three times during the nine years Annual surveys that track a market orientation of the firm would allow researchers to assess whether market orientation's effect on business performance stops when at least one or more competitors are market oriented We asked managers to assess their firms' market orientation It is possible that customers' assessments of a firm's market orientation are more accurate Further research could assess the value of using customer assessments of market orientation to predict business performance

In this section, we address a few issues beyond the scope of this study that we leave for future investigation For example, Pelham's (1997) findings suggest that a market orientation would be a less significant determinant of performance in markets in which cost cutting and economies of scale are the dominant sources of SCA We did not examine these effects However, this does not diminish our study's contributions relative to the influence of time on a market orientation–performance relationship Further research should incorporate managers' enduring cost-cutting strategies into the overall framework In addition, continuous investments in market orientation are warranted, particularly in industries characterized as highly turbulent Extending this study to a more recent time frame would also be worthwhile to capture the unprecedented turbulence occurring, particularly in financial markets

The market orientation literature would also benefit from incorporating customers' value emphasis (price versus quality) on the relationship between market orientation and performance This could indicate the extent to which managers embrace cost-cutting methods Further research should develop theories that provide guidance on market conditions that are conducive to creating new markets rather than serving existing markets better (Jaworski, Kohli, and Sahay 2000) and the resources that would enable organizations to do so

In addition, prior research has found statistical support for both the customer (Slater and Narver 1994) and the employee (Siguaw, Brown, and Widing 1994) in determining the consequences of market orientation in the short run Therefore, further research should include a more exhaustive list of performance measures, such as customer loyalty, satisfaction, and innovative capability, to examine the extent to which a market-oriented strategy affects these measures Such a study would be of immense theoretical and managerial relevance because the performance measures that provide shareholder value are constantly changing

A constant barrage of new customer relationship management systems tempts managers to continuously update their technology, which could negatively affect profit Yet technological innovations could be classified as product or process innovations Product innovations are primarily geared toward expanding into new markets, introducing new products, and attaining higher levels of customer loyalty, process innovations are primarily geared toward obtaining cost efficiencies Intuitively, we would expect the performance benefits associated with being market oriented to diminish more under process innovation than under product innovation Thus, further research could address the advantages and disadvantages of technological innovation on performance under varying conditions

The coefficients we report in this study indicate that the effect of market orientation on profitability is greater than market orientation's effect on sales in the long run However, given that sales and profit are different dependent variables, the elasticity of market orientation on sales and profit must be computed to determine which has more pronounced effect Depending on the level of market orientation, the respective elasticities can vary Literature on customer satisfaction and lifetime value (Bolton 1998, Reinartz and Kumar 2000) also suggests that an organization gains in customer equity by satisfying and retaining the right customers for longer durations The marketing discipline could benefit from research relating market orientation directly to lifetime value precepts

Finally, embracing a market orientation is one way to respond to competitive intensity in the marketplace Strategic market management purports that managers constantly scan the environment and develop proactive strategies to improve performance in competitive situations However, in highly competitive situations, managers may depend more on a "proactive" market orientation than on a "reactive" market orientation (Narver, Slater, and MacLachlan 2004) Thus, ethnographic studies focusing on managers' strategic approaches in terms of proactive versus reactive market-oriented tactics could expand existing knowledge of market orientation

In the absence of market turbulence and competitive intensity, market orientation has a diminishing effect on sales and profit However, markets are becoming more competitive Thus, this research offers some encouraging news in a turbulent business environment That is, managers should "stay the course" in terms of their market orientation strategy Furthermore, volatile market conditions can actually strengthen the influence of market orientation on business performance Therefore, we advise organizations not to abandon their market-oriented strategy because it is the cost of competing, particularly in these turbulent times

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David R. Bell, Daniel Corsten, & George Knox

From Point of Purchase to Path to Purchase: How Preshopping Factors Drive Unplanned Buying

Many retailers believe that a majority of purchases are unplanned, so they spend heavily on in-store marketing to stimulate these types of purchases. At the same time, the effects of "preshopping" factors—the shoppers' overall trip goals, store-specific shopping objectives, and prior marketing exposures—are largely unexplored. The authors focus on these out-of-store drivers and, unlike prior research, use panel data to "hold the shopper constant" while estimating unbiased trip-level effects. Thus, they uncover opportunities for retailers to generate more unplanned buying from existing shoppers. The authors find that the amount of unplanned buying increases monotonically with the abstractness of the overall shopping trip goal that is established before the shopper enters the store. Store-linked goals also affect unplanned buying; unplanned buying is higher on trips in which the shopper chooses the store for favorable pricing and lower on trips in which the shopper chooses the store as part of a multistore shopping trip. Although out-of-store marketing has no direct effect, it reinforces the lift in unplanned buying from shoppers who use marketing materials inside the store. The authors discuss the implications for retailers.

Keywords: consumer behavior, Poisson model, retailing, Tobit model, unplanned buying

> Supermarkets are places of high impulse buying. ... 60 to 70 percent of purchases there were unplanned, grocery industry studies have shown us. (Underhill 2000, p. 101)

Acting in accordance with the widespread belief that many purchases are unplanned, managers invest considerable resources inside the store to influence shoppers. Recently, the Grocery Marketing Association (2007) forecasted a compound annual growth rate of more than 20% for in-store marketing budgets; furthermore, according to *Advertising Age*, "the oft-quoted statistic that consumers make 70% of brand decisions in the store boosted shopper marketing and made other advertising seem almost pointless" (Neff 2008). Although unplanned buying clearly results from exposure to in-store stimuli, we argue that it also depends on conditions established before the shopper enters the store, some of which are under the retailer's control. We take the retailer's perspective and focus on these largely ignored out-of-store factors, including the overall trip goal and other shopping trip antecedents, while controlling for known in-store drivers. Retailers can benefit by generating additional unplanned buying from their existing shopper base.

Unplanned buying is essential to retailers, but academic research is sparse, and what constitutes "unplanned buying" differs by study. We examine unplanned category purchases because a majority of items on shopping lists are at the category, rather than the brand or stockkeeping unit, level (Block and Morwitz 1999); our dependent variable, the total number of unplanned category purchases per trip, enables us to assess the basket-level impact of the out-of-store factors. Classic (e.g., Kollat and Willett 1967) and recent (e.g., Inman, Winer, and Ferraro 2009) articles have studied category characteristics and shopper activities inside the store that have implications for consumer welfare (e.g., ways consumers can safeguard themselves from "too much" unplanned buying). In contrast, we explore the role of consumer preshopping strategies and show how a retailer can use this "shopping trip antecedent" perspective to stimulate unplanned buying.[1]

In summary, we study how what a shopper "brings to the store" affects how he or she behaves when "inside the store." We focus on actionable trip-level drivers, such as the

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[1] Several major retailers (including Wal-Mart) increasingly target customers according to the purpose of their shopping trip (Fox and Sethuraman 2006); we validate this orientation as an approach to understanding unplanned buying (see the "Discussion and Conclusion" section).

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

Journal of Marketing
Vol. 75 (January 2011), 31–45

abstractness of the overall shopping goal (Lee and Ariely 2006) and specific goals associated with store choice (e g , those related to anticipated prices and assortments, as in Bell and Lattin [1998] and Briesch, Chintagunta, and Fox [2009]) Controlling for the main effects of in-store stimuli, we examine the interaction between out-of-store and in-store promotions (Kahn and Schmittlein 1989, 1992) We build on studies linking shopping trip antecedents to in-store choices (e g , Briesch, Chintagunta, and Fox 2009, Hansen and Singh 2009, Kahn and Schmittlein 1989, 1992) and show how they affect unplanned buying

In contrast with most published research, we use diary panel data to investigate unplanned buying Panel data are critical to our substantive objective, a positive relationship between, for example, shopping goal abstractness and unplanned buying in cross-sectional data cannot distinguish two rival explanations (1) Abstract-goal shoppers (a specific shopper segment) do more unplanned buying, and (2) these same shoppers do more unplanned buying on trips when their shopping goal is abstract If the former explanation is true, retailers may only be able to augment unplanned buying by attracting certain types of shopper, if the latter is true, more unplanned buying can be generated from the existing customer base This distinction is crucial because it is more costly for the retailer to pursue a strategy based on the first explanation than the second [2]

We contribute three new findings to the collective knowledge on unplanned buying First, unplanned buying increases monotonically with the abstractness of the overall shopping goal the shopper holds before entering the store Second, store-linked goals held before shopping produce trip-specific changes in unplanned buying On trips in which the household chooses the store for good pricing and shopping convenience, there is more unplanned buying, on trips in which the household chooses the store as part of a multistore shopping strategy, there is less (more than one store-specific goal can be activated on a trip) Third, out-of-store marketing has no direct effect on unplanned buying, however, exposure to out-of-store marketing reinforces the lift in unplanned buying when shoppers report using marketing inside the store We show that the collective revenue impact of these effects is significant, and we offer some preliminary evidence that the "abstract-goal" effect differs across retail formats for the same shopper Although hard discounters receive a larger share of shoppers' abstract trips, a shopper visiting a full-service supermarket with an abstract shopping trip goal does even more unplanned buying (i e , more than that with the abstract goal alone)

We organize the rest of the article as follows We first summarize prior findings, introduce our shopping trip antecedent perspective, and develop our hypotheses Next, we describe the unique diary panel data (more than 18,000 purchases in 58 categories from more than 3000 trips, 400 households, and 23 stores) and measures Then, we specify Poisson and Tobit models and report the findings In the final section, we offer implications for managers and researchers

Literature Review and Conceptual Development

Our objective is to understand how shoppers' goals and the marketing they are exposed to before they enter a store shape their unplanned buying decisions when they are inside the store We begin with a brief summary of previous findings and then introduce our conceptual framework and hypotheses

Prior Research

In their classic study, Kollat and Willett (1967) find that unplanned buying is positively related to transaction size and negatively related to shopping lists and the number of years married By examining the frequency of past customer experience with the chosen unplanned items, they surmise that "in-store stimuli usually reminds shoppers of present or future needs rather than evoking new needs" (p 30) Granbois (1968) finds that unplanned buying increases with time spent in the store, the number of aisles shopped, and the number of people in the shopping party Park, Iyer, and Smith (1989) find that shoppers do the most unplanned buying when they are in unfamiliar stores and under no time pressure Beatty and Ferrell (1998) focus on individual differences and find that the "propensity for impulsiveness" trait is a significant driver of unplanned buying Rook and Fisher (1995) study individual differences as well, they show that normative evaluations moderate the acceptability of impulse buying—purchasing a gift on impulse is a good thing, but splurging on oneself is not Drawing on the self-control literature, Inman, Winer, and Ferraro (2009) predict and find that certain category characteristics, such as hedonicity, and consumer in-store activities, such as the number of aisles shopped, increase unplanned buying across shoppers

We provide more information on prior findings and methods in Table 1 A common theme across these articles is the focus on in-store drivers of unplanned buying and the effects of individual difference variables (i e , demographics and shopping habits) Our study complements these by examining out-of-store factors and trip-level antecedents of unplanned buying Studies that focus on preshopping factors from which the motivation and context for a shopping trip emerge are rare ("Marketing Actions That Influence Shopper Behavior" is a focus of the Marketing Science Institute's [2010] "Shopper Marketing" research initiative)

This Research: Out-of-Store Factors and Hypotheses

We develop our conceptual framework in a way similar to Chandon and colleagues (2009), who study the effectiveness of in-store marketing As Figure 1 shows, we isolate out-of-store factors, controlling for in-store factors, and allow for the possibility that time spent shopping is endogenous [3] In our model, we focus on a household's preshopping process, which includes establishing an overall shopping goal, developing store-specific shopping goals, and experiencing possible exposure to out-of-store marketing

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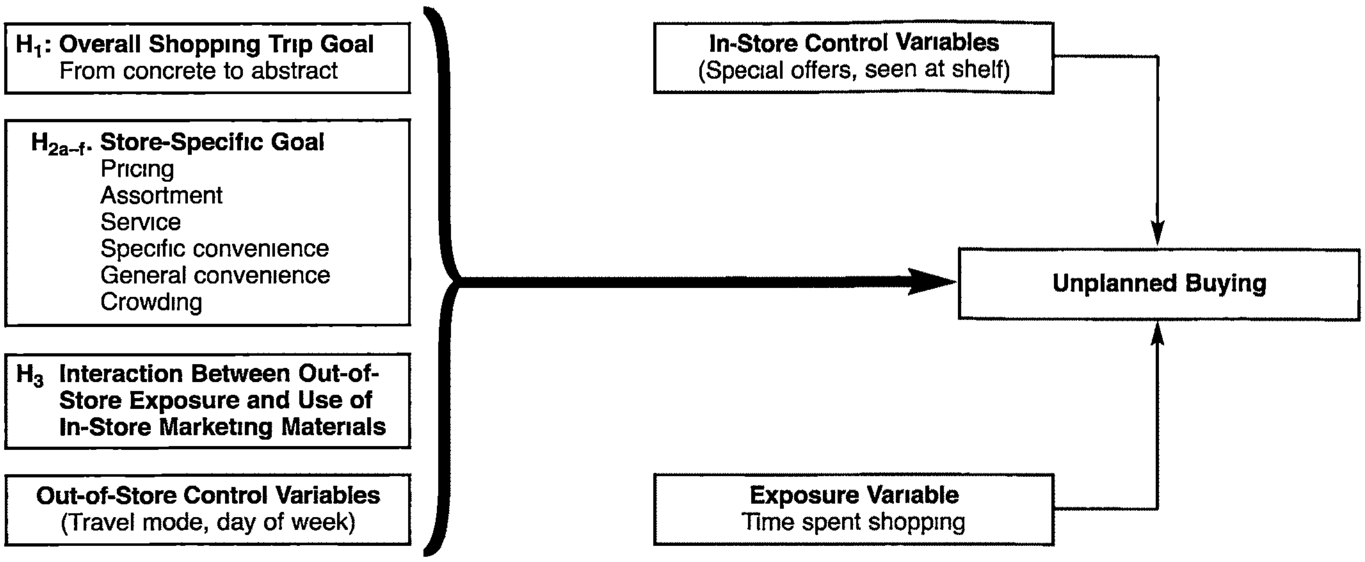
[2] We thank an anonymous reviewer for suggesting this important clarification

[3] We provide more details in the "Models and Findings" section and thank an anonymous reviewer for suggesting the approaches we take See Equations 1–4 and the related discussion

TABLE 1
Summary of Selected Literature on Unplanned Buying

Research Study	Variables	Research Methods and Data	Key Finding
Kollat and Willett (1967)	•Main dependent variable number of different products purchased •Independent variables shopper traits (i e , demographics) and shopping trip factors (e g , transaction size, major trip, purchase frequency, use of shopping list)	•Collection method shopper interviews on store entry and exit •Amount and type of data 596 shoppers, 64 categories, cross-sectional data	Most unplanned purchases are a response to forgotten needs and out-of-stock products
Granbois (1968)	•Main dependent variable number of different products purchased •Independent variables shopper traits (e g , demographics) and shopping trip factors (e g , time in store, number in shopping party)	•Collection method shopper interviews on store entry and exit, observation of shoppers while shopping •Amount and type of data 388 shopping parties, 84 categories, cross-sectional data	The study of unplanned purchasing can be improved by combining survey with observational methods
Park, Iyer, and Smith (1989)	•Dependent variable purchase of products to satisfy needs that we unrecognized •Independent variable shopping trip factors (e g , store knowledge, time available for shopping)	•Collection method shoppers interviewed as in Kollat and Willett (1967) •Amount and type of data 68 shopping parties in four experimental conditions (high or low knowledge, no time pressure or time pressure), cross-sectional data	Most unplanned purchasing are done in the low-store-knowledge/no-time-pressure condition
Beatty and Ferrell (1989)	•Main dependent variable likelihood of an impulse purchase •Independent variables shopper traits (i e , demographics, impulse buying tendency) and shopping trip factors (e g , time, budget, enjoying)	•Collection method shoppers interviewed as in Kollat and Willett (1967) •Amount and type of data 533 shoppers, 153 who made impulsive purchases, cross-sectional data	Individual differences in the propensity for impulsiveness are a significant driver of unplanned buying
Bucklin and Lattin (1991)	•Main dependent variable probability of category purchase incidence, latent shopping state (planned or opportunistic) •Main independent variables shopper "traits (i e , deal loyalty) and shopping trip factors (e g , inventory, store loyalty, marketing-mix variables)	•Collection method purchase data collected from supermarket scanners •Amount and type of data 152 shoppers, 52 weeks of purchases, 2 categories, panel data structure	The probability of unplanned state is higher in low-loyalty stores and for households that buy on deal
Rook and Fisher (1995)	•Main dependent variable alternative purchase scenarios that vary in level of impulsiveness •Main independent variable shopper traits (i e , buying impulsiveness, normative evaluations of impulsiveness as moderator)	•Collection method respondent evaluation of hypothetical buying scenarios (Study 1), actual buying behavior (Study 2) •Amount and type of data 212 undergraduate students (Study 1), 104 mall shoppers (Study 2), cross-sectional data	Impulsive buyers (trait) do more impulsive buying, but this is moderated by normative evaluation of acceptability of impulsive purchase
Inman, Winer, and Ferraro (2009)	•Main dependent variable decision type classified as planned, generally planned, or completely unplanned, for each product category •Main independent variables shopper traits (i e , demographics), shopping trip factors (e g , time, use of shopping list), and category factors (e g , display, coupon availability, category hedonicity)	•Collection method shoppers interviewed as in Kollat and Willett (1967) •Amount and type of data 2300 shoppers, 14 U S cities, over 40,000 purchases, cross-sectional data	Stable category factors and customer-self control factors exert the most influence on unplanned buying
The current study	•Main dependent variable number of unplanned category purchases per trip •Main independent variables previsit, out-of-store-factors (overall shopping trip goal, store-specific goals, out-of-store marketing)	•Collection method shoppers interviews and self-reports •Amount and type of data 441 shoppers, 3014 shopping trips, 58 product categories, more than 18,000 purchases, panel data	Unplanned buying increases monotonically with the abstractness of the shopping goal held by the shopper before entering the store

FIGURE 1
Conceptual Framework: How Preshopping Factors Drive Unplanned Buying


H_1: Overall Shopping Trip Goal
From concrete to abstract
H_{2a-f}. Store-Specific Goal
Pricing
Assortment
Service
Specific convenience
General convenience
Crowding
H_3 Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials
Out-of-Store Control Variables
(Travel mode, day of week)
In-Store Control Variables
(Special offers, seen at shelf)
Unplanned Buying
Exposure Variable
Time spent shopping

(e g , store flyers in the mail, word of mouth from family and friends, television advertising) Figure 1 shows each of these three shopping trip elements The overall shopping trip goal ranges from concrete to abstract, whereas store-specific goals cover pricing, assortment, service, location convenience, and crowding (more than one store-specific goal can be activated on any particular trip), out-of-store marketing encompasses a variety of factors Note that each of these shopping trip elements is (at least in principle) within the sphere of the retailer's influence

Overall shopping trip goal (H_1) Shoppers may enter a store with an overall goal ranging from the very precise and concrete (e g , to take advantage of a specific promotion) to the relatively abstract (e g , to fill up on weekly needs) Construal-level and mind-set theories also distinguish between abstract and precise goals (e g , Gollwitzer 1999, Trope, Liberman, and Wakslak 2007), decision makers in "abstract" states are more flexible and receptive to their environments, whereas those in more precise states are "closed off" to their surroundings More recent applied research has also emphasized the importance of goal abstraction "The success of marketing actions, such as promotions, depends on the *goals* consumers have when they are exposed to such promotions" (Lee and Ariely 2006, p 60, emphasis added) Related evidence shows that the "type of trip"—a proxy for shopping goal abstractness—affects in-store behaviors, conditional on store choice (e g , Seetharaman, Ainslie, and Chintagunta 1999, Walters and Jamil 2003)

> H_1 Unplanned buying increases monotonically with the abstractness of the individual consumer's overall shopping trip goal

Store-specific goals (H_2) Store choices depend on price image perceptions (Hansen and Singh 2009), breadth and depth of assortment (Briesch, Chintagunta, and Fox 2009), location convenience (Huff 1964), the ability to do one-stop shopping (Messinger and Narasimhan 1997), and store service—an important element in store positioning (Lal and Rao 1997) By definition, any reason for choosing a store affects store choice (positively) What is not known is whether these store-specific goals determined *ex ante* (i e , before the visit) also affect unplanned buying in the store Prior research implies that shoppers will do more unplanned buying in stores with low prices because they feel more normatively justified (Rook and Fisher 1995) On trips in which shoppers take advantage of one promoted product, they will likely be aware of and buy other promoted products (Lichtenstein, Netemeyer, and Burton 1995) Similarly, wider assortments tempt shoppers to deviate from plans and also encourage those with poorly defined preferences to do more unplanned buying Stores with good service also engender confidence and pleasure in shopping, which is positively related to unplanned buying (Donovan et al 1994, Sherman and Smith 1987)

> H_{2a} (Pricing) Unplanned buying increases on trips in which the shopper chooses the store for low prices and attractive promotions
>
> H_{2b} (Assortment) Unplanned buying increases on trips in which the shopper chooses the store because it has a wide assortment
>
> H_{2c} (Service) Unplanned buying increases on trips in which the shopper chooses the store because it has good service

We hypothesized that the store choice reasons of "low prices," "large assortment," and "good service" increase unplanned buying on the trip, however, other reasons for store choice need not increase unplanned buying Location convenience from one-stop shopping in the chosen store ("everything I need in one place") and one-stop shopping for the trip in general should have opposite effects A store chosen for one-stop shopping should experience more unplanned buying—by committing to only one store, the shopper may be signaling that he or she has insufficient time (Zeithaml 1985) or cognitive resources (Bettman 1979) to create a detailed plan on a given trip. Conversely, trips in which the shopper plans to visit multiple stores may indicate more complex planning because he or she may spread category purchases across stores. On these trips, the shopper may also cherry-pick from colocated stores (Fox and Hoch 2005). These behaviors imply less unplanned buying in individual stores on a multistore trip.

> H_{2d}: (Specific convenience) Unplanned buying increases on trips in which the shopper chooses the store for one-stop shopping.
>
> H_{2e}: (General convenience) Unplanned buying decreases on trips in which the shopper chooses the store because he or she can visit other stores at the same time.

Finally, on some trips, the shopper might choose a store to avoid crowds. On the one hand, more space allows the shopper to shop with an open mind-set and take in the store environment; these factors should make the shopper more susceptible to unplanned buying.[4] On the other hand, a less crowded store means less time waiting and less exposure to the product choices of other shoppers; exposure to environmental cues, such as noise and crowding, decreases self-control (Evans 1979), which implies that there is more unplanned buying in congested stores. Moreover, Levav and Zhu (2009) find that shoppers react against "confinement" by expressing a need for more variety. Thus, we expect the following:

> H_{2f}: (Crowding) Unplanned buying decreases on trips in which the shopper chooses the store to avoid in-store crowding and long queues.

Interaction between out-of-store exposure and use of in-store marketing materials (H_3). Shopper responsiveness to marketing stimuli is the *sine qua non* of research in retailing. Shoppers redeem coupons when benefits exceed the cost of sorting and clipping (e.g., Chiang 1995; Neslin 1990); they stockpile when savings exceed the storage and holding costs (e.g., Bell and Hilber 2006; Blattberg, Eppen, and Lieberman 1981). Shoppers also respond to monetary and nonmonetary promotions (e.g., Chandon, Wansink, and Laurent 2000); they are induced to buy more by signs and displays (Dhar and Hoch 1996; Inman and McAlister 1993; Inman, McAlister, and Hoyer 1990); and their overall responsiveness is predicted by their psychographics (Ailawadi, Neslin, and Gedenk 2001).

It is well known that in-store marketing activities capture a shopper's attention and therefore drive up unplanned buying (Inman, Winer, and Ferraro 2009). On trips in which the shopper takes note of marketing information outside the store environment, the shopper is likely to have engaged in planning (Bettman 1979), so this should not affect unplanned buying. Prior research suggests, but does not test, the idea that when a shopper is exposed to out-of-store marketing on a trip, in-store stimuli can trigger forgotten needs (Inman, Winer, and Ferraro 2009; Kollat and Willett 1967), suggesting a positive interaction between out-of-store and in-store marketing.[5]

> H_3: Unplanned buying increases on trips when the shopper who has been exposed to out-of-store marketing also has a tendency to scan marketing materials inside the store.

Control Variables

We control for the direct effects of in-store marketing and other out-of-store contextual factors that are not of substantive interest per se (see Figure 1). These factors include travel time to the store and whether the store was visited second or later in a multistore trip; both are proxies for the "fixed costs" of shopping (e.g., Tang, Bell, and Ho 2001). We also control for the mode of travel (walking, cycling, or driving), which affects the capacity to transport goods, shopping periodicity (e.g., Helsen and Schmittlein 1993), weekend shopping patterns (Kahn and Schmittlein 1989), and trip-level variation in shopper gender (e.g., Kollat and Willett 1967). The number of planned purchases (i.e., those determined before the shopping trip) controls for the *ex ante* trip-level basket size.

More time in the store on a trip leads to more unplanned buying (Park, Iyer, and Smith 1989). We have no substantive interest in the effect of time, but we need to control for it appropriately. One approach is to argue that, conditional on the other variables, time spent in the store can be included as a direct covariate (see Inman, Winer, and Ferraro 2009); however, as is Inman, Winer, and Ferraro (2009), we are concerned that time in the store is possibly endogenous. In our data, there is a relatively small trip-level positive correlation between time in the store and the number of categories bought (r = .24). We use two model-based solutions to address this endogeneity problem—instrumental variables Poisson regression and Tobit regression—and discuss both in the "Models and Findings" section. Our goal is to show that the estimates of interest (i.e., those that test H_1–H_3) are robust to alternative methods of controlling for the effect of time spent in the store.

Data and Measures

The use of diary panel data to study unplanned buying is a unique aspect of our study. We first discuss data collection and then offer the specific measures used to test H_1–H_3.

Data

The diary panel contains more than 18,000 category purchases from 58 product categories (see Appendix A). Participating households were screened to be representative of the market for the country in question and were paid €20 for their cooperation. After each trip, households completed a short questionnaire and checked off whether each category purchase was "planned in advance of the store visit and purchased" or "decided in store and purchased" The questionnaire included several other questions, respondents did not know that we were studying unplanned buying per se Households completed a new questionnaire directly after each trip and attached their receipts (We required these to ensure accurate reporting and subsequently cross-checked receipts and questionnaire responses) After two weeks, the research firm visited each household to collect the questionnaires

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[4] We thank an anonymous reviewer for this observation.

[5] Out-of-store marketing covers three separate types of marketing initiatives that are collected in the shopper survey. We discuss these in the "Data and Measures" section; we show each of these in Table 2 and provide the exact questions and questioning procedure in Appendix B.

Recall that a key methodological difference between this study and prior research is that ours uses panel diary data rather than one-shot experiments or shopper intercept data (see Table 1) These data enable us to disentangle whether changes in unplanned buying are truly driven by factors that vary across shopping trips for the same customer and not simply by differences across customers (unobserved heterogeneity) This is important because if the retailer can generate more unplanned buying from the existing shopper base, it obviates the need to attract a certain type of shopper who is especially susceptible to unplanned buying We estimate panel fixed-effects models to control for unobserved shopper heterogeneity that may be correlated with our key measures, but this requires at least two observations per household [6] This leaves 441 households that take 3014 supermarket trips during the two-week observation period from June 2006 to July 2006 Households take between 2 and 23 trips (the mode is 6), and trips occur at 23 distinct retail chains The average number of unplanned category purchases per trip is 1 39 (the range is 0 to 10), the average total number of planned categories is 5 00, and the average time spent in the store is 18 minutes We provide summary statistics for the variables in Table 2

Measures: Hypotheses H_1–H_3

Overall shopping trip goal (H_1) To test H_1, we elicit shopping trip goals directly, using a continuum of abstraction ranging from concrete goals ("shopping for special offers and promotions," "shopping for immediate consumption," "shopping for a meal on the same day") to the relatively abstract ("fill-in trip daily essentials and top-up shopping") to the most abstract ("major trip shopping for the whole week or more") [7] Fill-in trip for daily essentials and top-up shopping is the most prevalent shopping trip goal (43% of all trips), followed by major trips that occur weekly or less frequently (26%), shopping for meals on the same day (15%), shopping for immediate consumption (11%), and shopping for special offers and promotions (3%) We also need to rule out plausible alternative explanations for the goal abstraction effect (H_1) On trips in which shoppers have an abstract goal, they might peruse more items and visit more aisles This could lead to more unplanned purchases We rule these explanations out by adjusting for the number of planned purchases (a proxy for items perused) and the amount of time spent in the store (a proxy for the number of aisles visited)

Store-specific goals (H_2) We follow the procedure used to develop the measures to test H_1, that is, we elicit these store choice goals directly from shoppers We show the six possible store choice goals in Table 2 Shoppers can report multiple goals for choosing a particular store on a trip (the average number of store goals per trip is 1 7) The most common reason for selecting the chosen store is "able to visit other stores at the same time" (37% of all trips) We test H_{2a-f} after controlling for baseline unplanned purchasing in each store (though store fixed effects) to rule out unobserved store factors as an explanation for the findings

Interaction between out-of-store exposure and the use of in-store marketing materials (H_3) We measure preshopping exposure to marketing stimuli outside the store environment by having shoppers indicate whether, before entering the store, they saw or were exposed to (1) newspapers inserts, (2) store leaflets in the mail, and (3) other marketing information, such as television or radio advertising, coupons, or shopping advice from friends and family We list these three types of preshopping marketing exposures in Table 2 along with their summary statistics (Appendix B presents the wording of the questions used) As with store choice goals (H_2), shoppers can report exposure to more than one type of out-of-store marketing activity Of the three, a leaflet delivered to the home is the most commonly observed out-of-store marketing device (seen on 19% of all trips, see Table 2)

Recall that H_3 pertains to whether the interaction of these exposures with the tendency of the shopper also to scan marketing materials inside the store has any effect on unplanned buying To test H_3, we collect an additional parsimonious measure from each shopper Shoppers indicate whether they "stay informed about special offers using the leaflet inside the store" (they indicate agreement with this statement for 26% of all trips) Each measure of out-of-store marketing interacts with this measure

Finally, in testing H_3, it is important to control for exposure to in-store marketing on shopping trips (in-store marketing is a well-known driver of unplanned buying) We measure trip-level exposure to two types of in-store marketing listed under "Control Variables" in Table 2 "special offers seen at the shelf" (27% of trips) and "special offers seen on display away from the shelf" (17% of trips)

Models and Findings

We now develop and estimate several models of unplanned buying to ensure that the conclusions we draw are valid To account for the possibly endogenous relationship between unplanned buying and time spent in the store, we use an instrumental variables Poisson model for the count (of unplanned category purchases per trip) and two Tobit specifications that explicitly model the rate of unplanned buying per unit time spent in the store

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[6] We also estimate random-effects models using all the data, however, a Hausman test shows that the key random-effects modeling assumption—that the regressors are uncorrelated with the random effect—is rejected We provide more details in the next section

[7] Some research (e g , Kahn and Schmittlein 1989, 1992) distinguishes "major" and "fill-in" trips *ex post* from grocery receipts Our measures, developed from direct consumer self-reports (e g , Walters and Jamil 2003), are more comprehensive, mutually exclusive, and collectively exhaustive, and a professional marketing research company hired by our data provider pretested them on a large multinational consumer packaged goods company

TABLE 2
Model Variables and Summary Statistics

Model Variables[a]	M	SD	Minimum	Maximum
H_1: Overall Shopping Trip Goal[b]				
Shopping for special offers and promotions	031	174	0	1
Immediate consumption, to use straight away	112	315	0	1
Same day, shopping for meals on the same day	149	346	0	1
Fill-in trip, daily essentials, top-up shopping	431	495	0	1
Major trip, weekly or less often	256	424	0	1
H_2· Store Choice Goals				
a Low prices	243	429	0	1
a Attractive promotions and special offers	298	458	0	1
b Large assortment	217	412	0	1
c Friendly store, good service	149	356	0	1
d Store offers one-stop shopping	312	463	0	1
e I can visit other stores at the same time	365	482	0	1
f No crowds in the store	116	320	0	1
H_3: Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials				
Special offers seen in the newspaper	013	112	0	1
Special offers seen in the leaflet delivered to home	189	392	0	1
Special offers seen on television, as heard on the radio, as seen in coupons, or as communicated by friends and family	025	157	0	1
Stay informed through leaflet about offers	257	357	0	1
Control Variables				
Travel time to store (log minutes)	1 99	618	0	4 26
Travel to store by bicycle or scooter	325	469	0	1
Travel to store by car or taxi	479	500	0	1
Trip on Friday or Saturday (stores closed Sunday)	379	485	0	1
Primary shopper female on current trip	814	389	0	1
Multistore shopping trip (at least one other store visited on this trip before current store)	179	384	0	1
Total number of planned category purchases	4 997	4 147	1	28
Special offers seen on the shelf	271	446	0	1
Special offers seen on display away from shelf	165	371	0	1
I wanted the shopping trip to be fast and efficient	679	467	0	1
Exposure Variable				
Time spent shopping (minutes)	17 821	11 484	1	85
Dependent Variable				
Total number of unplanned category purchases	1 39	1 93	0	10

[a]All model variables, except the control variables "travel time to store" and "total number of planned category purchases" and the exposure variable "time spent shopping," are dummy variables The actual questions asked to each survey participant appear in Appendix B

[b]The "overall shopping trip goal" (H_1) variables are mutually exclusive and collectively exhaustive, that is, the shopper chooses only one overall shopping trip goal per shopping trip Conversely, the shopper can indicate agreement with any number of "store choice goals" (H_2) and any of the three types of out-of-store marketing variables, as well as the tendency to use in-store leaflets (interaction between out-of-store exposure and the use of in-store marketing materials [H_3]), and can check any number of the control variables

Notes Proprietary survey panel data were collected from 441 shoppers who took 3014 shopping trips at supermarkets in a Western European country The data were collected in conjunction with a major multinational packaged goods manufacturer that asked to remain anonymous The data cover the period from June 12 to July 10, 2006

A Poisson Model of Unplanned Buying

Consider h = 1, 2, , H households taking t = 1, 2, , T_h shopping trips The total number of unplanned purchases on each trip t for each household h is UP_{ht}, and we assume that UP_{ht} follows a Poisson distribution The number of unplanned category purchases is an integer with no a priori upper bound [8] As Ross (1996) shows, the Poisson distribution can be derived as an approximation to the sum of independent Bernoulli random variables (X_1, X_2, , X_n) with heterogeneous parameters To understand this, let $X_i = 1$ if an unplanned purchase is made in category i = 1, 2, , N and 0 if otherwise, where N is the total number of categories Dropping subscripts, we let $UP = \Sigma_{i=1}^{N} X_i$ and allow unplanned purchase incidence probabilities to vary across categories, $X_i|\theta_i \sim \text{Bernoulli}(\theta_i)$ If we assume that θ_i follows a beta distribution B(a, b) across categories, the marginal distribution of X_i is Bernoulli with probability $p = a/(a + b)$ [9]

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[8] Technically, the 58 categories in the consumer survey is an upper bound, but this is far greater than the observed maximum number of unplanned category purchase decisions on a single trip (10)

[9] See Knorr-Held and Besag (1998, p 2050) and Ross (1996) This Poisson approximation also allows unplanned purchase incidence probabilities to be weakly positively correlated across categories Ross (1996, p 465) provides the error bound for the Poisson approximation when correlations are present

If p is small, UP ~ Poisson (Np), which leads to Equation 1 with $Np = \mu$

Although a multivariate probit model could be applied to the category-level data, modeling the total number of unplanned category purchases is better suited to our trip-level research objectives [10] The categories themselves (listed in Appendix A) are defined at a level that makes cross-category substitution less relevant, furthermore, we have no information on category-level marketing The large number of categories (58) would also make it difficult to implement this approach

As such, UP_{ht} follows a fixed-effects Poisson model (Winkelmann 2008, p 222)

$$(1) \qquad P\left(UP_{ht} \middle| x_{ht}, \alpha_h\right) = \frac{\exp\left(-\alpha_h \mu_{ht}\right)\left(\alpha_h \mu_{ht}\right)^{UP_{ht}}}{UP_{ht}!},$$

where

$$\mu_{ht} = \tau_{ht}\exp(x'_{ht}\beta)$$

The Poisson-distributed variable is the product of an exponential mean function, μ_{ht}, and a multiplicative household-specific effect, α_h, that is estimated jointly with β The mean μ_{ht} in Equation 1 is a combination of the nonnegative rate, $\exp(x'_{ht}\beta)$, adjusted for the length of exposure τ_{ht} (i e , the amount of time spent in the store) Explanatory variables (x_{ht}) are the out-of-store factors of interest as well as the set of controls and store fixed effects The expected number of unplanned purchases is as follows

$$(2) \qquad E(UP_{ht}|x_{ht}, \alpha_h) = \alpha_h \mu_{ht}$$

There is a closed-form analytical expression for $\hat{\alpha}_h$ that can be inserted back into the likelihood Because this obviates the need to estimate H separate household-level fixed-effect parameters, the estimates of β are neither biased nor inconsistent (Winkelmann 2008) The first-order condition for β uses within-shopper variation, averaged across shoppers, and is a product of the residuals, scaled by the within-household average ratio of observed unplanned buying ($\overline{UP}_h$) to expected unplanned buying ($\overline{\mu}_h$) and the explanatory variables

$$(3) \qquad \sum_{h=1}^{H}\sum_{t=1}^{T_h}\left(UP_{ht} - \frac{\overline{UP_h}}{\overline{\mu}_h}\mu_{ht}\right)x_{ht} = 0$$

We estimate household effects α_h nonparametrically A major reason to use a fixed-effects approach is to control for across-shopper differences (Allison and Waterman 2002) This uses shopping trip–level (within-household) variation to estimate parameters and averages the estimates across households Our fixed-effects model avoids biased estimates of β that arise from (1) misspecification of the distribution of random effects and (2) correlation between the shopper-level baseline α_h and the explanatory variables x_{ht} A Hausman test comparing our fixed-effects model with a random-effects model (which assumes that the distribution of α_h is independent of x_{ht}) rejects the random-effects specification ($p <$ 001) Because the first-order conditions in Equation 3 are identical to method-of-moments estimation, "one does not need to worry about over-dispersion, or other expressions of non-Poisson-ness" (Winkelmann 2008, p 227) [11]

An additional issue in our application is that exposure time (i e , time in the store) is potentially endogenous (see Figure 1 and the previous discussion of this point) We account for this by (1) using instrumental variables for exposure time in the Poisson model described previously and (2) estimating two separate Tobit specifications that directly model the rate of unplanned buying [12] We use day, hour, and location dummy variables as instruments that have significant effects on exposure time (first-stage regression $R^2 =$ 47) but not on unplanned buying directly ($\chi^2_{(16)} =$ 14 09, $p =$ 59), thus satisfying the instrumental variables exclusion restriction

A Tobit Model of Unplanned Buying

To further account for the possibly endogenous relationship between unplanned buying and exposure time (time spent shopping), we model the rate of unplanned buying as the dependent variable (i e , the total number of unplanned purchases on a trip divided by the time spent in the store, y_{ht}) Because this new variable is continuous and censored at zero, we can use a Tobit model to relate it to explanatory variables

$$(4) \qquad y_{ht} = \frac{UP_{ht}}{\log\left(\tau_{ht}\right)} = \max\left\{\alpha_h + x'_{ht}\beta + \varepsilon_{ht}, 0\right\}$$

We estimate two versions of the Tobit model because, unlike the Poisson, there is no analytical trick that lets us circumvent estimating all H household-level fixed effects The first uses standard maximum likelihood estimation, but it is well known that this procedure generates inconsistent estimates due to the incidental parameters problem (Baltagi 2008) The second uses a semiparametric approach, trimmed least absolute deviations (LAD), to estimate the fixed effects, which overcomes this problem (Honoré 1992)

Findings: Hypotheses H_1–H_3

Table 3 reports the estimates for the fixed-effect Poisson IV, Tobit, and trimmed LAD Tobit models The signs and levels of significance for the focal variables and the control variables are remarkably consistent across all three specifications, and this provides us with some assurance as to the robustness and validity of the estimates Hereinafter, we focus on the Poisson results The fourth column in Table 3 shows the marginal effects (from the Poisson IV model), for continuous covariates, we compute these at one standard deviation above and below the mean

Overall shopping trip goal (H_1) As the overall trip goal becomes more abstract (the shopper and all else are held constant), there is more unplanned buying The relevant

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[10] We thank an anonymous reviewer for this suggestion

[11] We estimated all models in STATA We estimated the Poisson model using conditional maximum likelihood

[12] We are grateful to an anonymous reviewer for suggesting the Tobit specification

TABLE 3
Parameter Estimates from Fixed-Effect (FE) Poisson and Tobit Models

Dependent Variable: UP_{ht} (Number of Unplanned Category Purchases)	FE Poisson (IV)[a]	FE Tobit[b]	FE Trimmed Tobit[c]	Marginal Effect (%)[d]
H_1: Overall Shopping Trip Goal				
β_1 Shopping for special offers and promotions	– 278†	– 174	– 210	–24
β_2 Immediate consumption, to use straight away	023	– 070	– 072	—
β_3 Same day, shopping for meals on the same day	119	138	132	—
β_4 Fill-in trip, daily essentials, top-up shopping	241**	222*	233*	27
β_5 Major trip, weekly or less often	462***	522***	569***	59
H_2: Store Choice Goals				
β_6 a Low prices	111†	148**	156*	12
β_7 a Attractive promotions and special offers	120*	085†	075	13
β_8 b Large assortment	064	064	074	—
β_9 c Friendly store, good service	088	112†	094	—
β_{10} d Store offers one stop shopping	111*	131**	121*	12
β_{11} e I can visit other stores at the same time	– 119**	– 033	– 064	–11
β_{12} f No crowds in the store	– 129*	– 067	– 119†	–12
H_3: Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials (H_3)				
β_{13} Special offers seen in the newspaper × stay informed through leaflet about offers	209	– 095	360	—
β_{14} Special offers seen in the leaflet delivered to home × stay informed through leaflet about offers	305**	252*	210	36
β_{15} Special offers seen on television, heard on the radio, seen in coupons, or communicated by friends and family × stay informed through leaflet about offers	518*	571*	505*	68
Control Variables				
γ_1 Travel time to store (log minutes)	– 121**	– 054	– 039	
γ_2 Travel to store by bicycle or scooter	180*	147*	172*	
γ_3 Travel to store by car or taxi	385***	377***	414***	
γ_4 Trip on Friday or Saturday (stores closed Sunday)	– 107**	– 066†	– 059	
γ_5 Primary shopper is female on current trip	345***	332**	279**	
γ_6 Multistore shopping trip (at least one other store visited on this trip before current store)	– 022	– 058	– 040	
γ_7 Total number of planned category purchases (log units)	– 613***	– 330***	– 326***	
γ_8 Special offers seen at the shelf	345***	377***	280**	
γ_9 Special offers seen on display away from shelf	468***	456***	419***	
γ_{10} I wanted the shopping trip to be fast and efficient	– 479***	– 671***	– 597***	
γ_{11} Special offers seen in the newspaper	– 221	174	– 028	
γ_{12} Special offers seen in the leaflet delivered to home	– 052	– 015	– 015	
γ_{13} Special offers seen on television, heard on the radio, seen in coupons, or communicated by friends and family	– 046	– 051	– 113	
γ_{14} Special offers seen at the shelf × major trip	– 074	046	044	
γ_{15} Special offers seen on display away from shelf × major trip	– 259*	– 084	– 142	
γ_{16} Special offers seen at the shelf × fill-in trip	– 170	– 047	– 068	
γ_{17} Special offers seen on display away from shelf × fill-in trip	– 212†	– 015	– 065	
Log-likelihood	–2,985	–2,298	—	

†$p < 10$
*$p < 05$
**$p < 01$
***$p < 001$

[a] The R^2 in the first-stage regression (with instruments for time) is 47

[b] We also estimated a random-effects Tobit model, the fixed-effects model is preferred under the Hausman test

[c] The trimmed Tobit LAD (estimator) estimates fixed effects semiparametrically (Honore 1992) We estimate this model as a robustness check

[d] Marginal effects for continuous covariates are calculated at one standard deviation above and below the mean for the Poisson IV model

Notes Total number of households = 441, shopping trips = 3014 Household and store fixed effects for all models are suppressed to save space (these are available on request) coefficients increase from $\beta_1 = -.278$ to $\beta_5 = .462$ (we observe the same monotonically increasing sequence in the coefficients from the Tobit and trimmed Tobit models). A joint test of a monotonic ordering from the concrete goals to the relatively abstract ("fill-in") to the most abstract ("major") is highly significant ($\chi^2_{(4)} = 34.14$, $p < .001$). Pairwise tests are consistent with H_1. The major-trip effect is larger than the fill-in-trip effect ($\chi^2_{(1)} = 8.37$, $p = .004$), and fill-in-trip effects are about the same as the effects for shopping for meals on the same day ($\chi^2_{(1)} = 2.39$, $p = .123$). The "same-day" effect is about the same as the effect of shopping for "immediate consumption" ($\chi^2_{(1)} = 1.18$, $p = .277$), but the effect of immediate consumption is larger than that for the goal of shopping for specific promotions ($\chi^2_{(1)} = 4.89$, $p < .027$). Thus, H_1 is largely supported.

Store-specific goals (H_2). Although any goal that leads to store choice on a trip is positive for the retailer (from a traffic perspective), it remains uncertain whether specific reasons translate into incremental (unplanned) category purchases. Our test of H_2 is stringent; the model includes 17 additional controls and store fixed effects to account for baseline store differences apparent for all customers. When the shopper chooses a store for its low prices ($\beta_6 = .111$, t-statistic = 1.82) or attractive promotions ($\beta_7 = .120$, t-statistic = 2.41), there is a 12%–13% increase in unplanned buying; however, assortment and service goals have no effect. Thus, there is modest support for H_{2a} but not for H_{2b} or H_{2c}.

When shoppers choose a store for store-specific convenience (one-stop shopping), there is 12% more unplanned buying ($\beta_{10} = .111$, t-statistic = 2.36). When shoppers choose a store for general convenience in the context of a larger plan, which may involve cherry-picking and basket splitting across stores ("I can visit other stores at the same time"), there is less unplanned buying ($\beta_{11} = -.119$, t-statistic = −2.59). Thus, H_{2d} and H_{2e} are supported. The control variable that measures whether a shop was visited second or later in a multistore trip is not significant ($\gamma_6 = -.022$, t-statistic = −.46). Combining this finding with support for H_{2d} and H_{2e} implies that on multistore trips, a shopper does less unplanned buying overall, not just at stores he or she visits later in the shopping sequence. Finally, when shoppers choose a store because it is "less crowded," they do less unplanned buying ($\beta_{12} = -.119$, t-statistic = −1.97). Consistent with H_{2f}, store congestion (and more exposure to the category choices of other shoppers) increases unplanned buying for the focal shopper on that trip.

Interaction between out-of-store exposure and use of in-store marketing materials (H_3). Trip-level exposure to out-of-store marketing activity has no significant direct effect on a household's unplanned buying (γ_{11}–γ_{13} are not significant in all three model specifications). As we predicted, however, there are positive interaction effects with the tendency to use in-store marketing (specifically, store leaflets). When a household is aware of leaflets before shopping and also reads leaflets taken in the store while shopping, there is 36% more unplanned buying ($\beta_{14} = .305$, t-statistic = 2.70). Similarly, when a household has prior exposure to store marketing through advertising seen on television or delivered through coupons or friends and family and also reads leaflets while shopping, there is 68% more unplanned buying ($\beta_{15} = .518$, t-statistic = 2.14). This is strong evidence for the interplay between out-of-store marketing and in-store marketing. Thus, with respect to H_3, we find strong support for Kollat and Willett's (1967) untested conjecture that in-store marketing can trigger forgotten needs.

Control Variables

Our model includes an extensive set of trip-level controls, in addition to store and household fixed effects. We have no substantive interest in the signs and significance of the control variables per se; however, it is important that they are either consistent with well-established results or plausible (for new variables). The pattern of effects is consistent across all three model specifications; we comment briefly on a few notable effects. Exposure to in-store marketing stimulates unplanned buying. Coefficients on shelf features and displays seen on a trip are highly significant ($\gamma_8 = .345$, t-statistic = 4.03, and $\gamma_9 = .468$, t-statistic = 4.65, respectively). This finding has been reported in the literature; however, our panel data models enable us to claim that this is unambiguously a trip-level effect for an individual shopper. Cross-sectional analysis cannot rule out the following alternative explanation: Only promotion-sensitive shoppers scan features and displays, and only these kinds of shoppers do unplanned buying.[13] (We also find larger in-store marketing coefficients in a model without fixed effects. This suggests that the findings for in-store marketing effects reported in the literature may be overstated.)

Unplanned buying increases on trips when the shopper travels by bicycle or car (relative to a base case of walking). Trips to more distant stores involve less unplanned buying ($\gamma_1 = -.121$, t-statistic = −3.65). This suggests that when the fixed travel cost is high, the shopper may be more inclined to plan category purchases. Consistent with Inman, Winer, and Ferraro's (2009) work, unplanned purchasing increases when the shopping trip is taken by a female member of the household ($\gamma_6 = .345$, t-statistic = 4.16). Kahn and Schmittlein (1989, 1992) speculate that the overall shopping trip goal interacts with response to in-store promotions. We find negative interaction effects (γ_{15} and γ_{17}) only in the Poisson model because they are artifacts of the log-linear model specification, which defines interactions as proportional to the main effects rather than a substantive finding per se (we do not find any significant effects in the Tobit models).

Robustness Checks

The main findings are robust to Poisson and Tobit specifications. The fit of the Poisson model is acceptable—the squared correlation between predicted and actual values is .49. The R^2_{KL} metric for nonlinear models proposed by Cameron and Windmeijer (1997) and based on the Kullback–Leibler divergence is .46. If we replace the number of planned purchases with a set of dummy variables, the results are largely unchanged. Because time is possibly endogenous, we use a Poisson IV estimation strategy, however, we obtain qualitatively similar effects for the parameters of interest with nonparametric controls for time (i.e., if we use dummy variables to capture shopping trips occurring in discrete intervals of time). We also quantify the additional variation in unplanned buying explained by a trip-level perspective. The R^2_{KL} is .29 in a household effects–only model; adding trip-to-trip variation increases R^2_{KL} by more than 50%. Thus, our substantive trip-level perspective is also justified on statistical grounds.

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[13] We thank an anonymous reviewer for drawing our attention to this point. A fixed-effects panel data model rules out these kinds of across-shopper differences.

Discussion and Conclusion

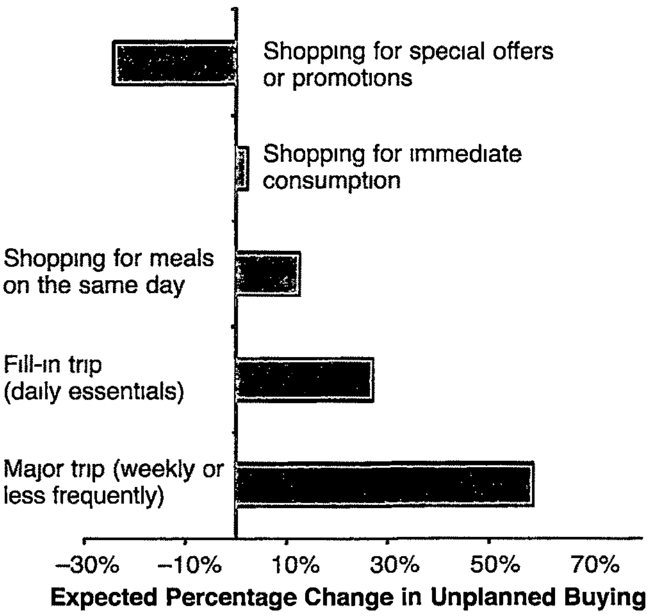
In contrast with prior literature, we explain trip-level unplanned buying that originates from decisions the shopper makes before he or she steps into the store, while controlling for previously found in-store effects. This is a key point of differentiation; most studies focus on differences across shoppers and categories and on the effects of stimuli found inside the store. Furthermore, our panel data models allow for a true trip-level interpretation of the model coefficients, and our findings are not confounded by heterogeneity across shoppers.

Key Findings

Figure 2 shows the average expected percentage change in unplanned category purchases as a function of the overall shopping trip goal (when all other factors are held constant). Consistent with H_1 and recent experimental work (e.g., Lee and Ariely 2006) as well as goal-setting (Gollwitzer 1999) and construal-level (Trope, Liberman, and Wakslak 2007) theories, the more abstract the shopping goal, the more unplanned buying takes place. Major trips have the greatest "scope" for unplanned buying because the shopping mission involves satisfying a range of household needs. One need could be related to a meal (e.g., dinner) but not the precise category (e.g., chicken). These trips show the greatest percentage lift in unplanned buying—almost 60%. Fill-in trips, which are used for "daily essentials" and "topping up," follow with a 27% increase in unplanned buying. Using the trip receipt data, we know that the average trip is €21.45, with an average of 5.0 planned category purchases and 1.4 unplanned category purchases. This means that unplanned purchases contribute approximately €4.70 to an average receipt and planned purchases contribute approximately €16.75. Unplanned buying on trips in which the shopper activates his or her most abstract overall trip goal contributes, on average, an additional €2.77, a 10% increase in the total amount spent.

As Kollat and Willett (1967, p. 29) reasoned more than 40 years ago, "During major trips, . . . the shopper's needs are not well defined; thus, the shopper is more receptive to in-store stimuli." Because we control for trip-level exposure to many other factors, the effect of concrete versus abstract goals shown in Figure 2 is greater than that due to marketing stimuli the shopper sees, overall basket size, time spent in the store, and the other variables for which we control (see Table 3). Our fixed-effects models estimate household-level intercepts and therefore also rule out explanations such as that certain types of households are more likely to have abstract goals.

FIGURE 2
Expected Percentage Change in Unplanned Buying as a Function of the Overall Shopping Trip Goal (All Other Variables Constant)



Any store-specific goal that brings a shopper to a store on a trip has a positive effect on traffic; however, our study shows that these goals also affect unplanned buying on the trip when the shopper is inside the store. On trips in which the store is selected for low prices and attractive promotions, there is more unplanned buying because the shopper may feel more normatively justified when he or she engages in incremental purchases (Rook and Fisher 1995). We find moderate increases in unplanned buying of 12%–13%. Again, the overall category and euro value of this lift is approximately 2% for the average shopper on the average trip.

Store-specific convenience (one-stop shopping) leads to 12% more unplanned buying, whereas general convenience with respect to a larger shopping plan ("I can visit other stores at the same time") reduces unplanned buying by a similar amount. We also show that on multistore trips, the shopper does less unplanned buying overall and not just in stores visited second, third, or later. To the extent that multistore trips are an increasing reality in the evolving retail landscape (Gijsbrechts, Campo, and Nisol 2008), there may be a corresponding decline in unplanned buying.

In summary, we find that the specific goal attached to a specific store affects not only the shopper's initial store choice but also his or her unplanned buying inside the store. Note that our test for incremental buying based on store-specific trip goals is stringent because the model includes fixed effects for stores and households as well as a large set of controls.

It is well known that exposure to out-of-store marketing activity facilitates planning and that exposure to in-store marketing stimuli generates unplanned buying. Thus, these marketing instruments appear to work in opposite directions. Nevertheless, we hypothesized (H_3) and found that for unplanned buying, in-store and out-of-store marketing can be mutually reinforcing. This implies that marketing activities should be assessed from the perspective of their collective, rather than individual, weight.

Implications for Managers

The findings we summarized offer new implications for managers. We comment on three: (1) the benefit of the trip-based, path-to-purchase viewpoint, (2) the differences in unplanned buying across formats, and (3) the need for alternative research methods to investigate shopper behavior.

The benefits of a shopping trip and path-to-purchase perspective. Taken as a whole, trip-level factors greatly improve our ability to understand unplanned buying (adding trip-to-trip variation to the model increased explanatory power by more than 50%). This suggests that retailers should move beyond competing for customers to competing over shopping trips. Sophisticated retailers and major suppliers are beginning to collect data on shopping patterns and segment shoppers according to their shopping trip mission (Fox and Sethuraman 2006) to understand what drives shopping differences across trips for the same household. Previously, we noted that many observers believe that most purchase decisions are made inside the store (Neff 2008). Consequently, marketers allocate funds to in-store marketing to stimulate unplanned buying with in-store displays, promotions, and technological innovations (Albert and Winer 2008). Although we endorse in-store marketing innovation, our findings also underscore the important influence of factors formed early along the path to purchase, when the motivation to shop first emerges. We believe that marketers can generate unplanned buying by persuading shoppers to evoke abstract goals. Furthermore, it makes sense to advertise abstract shopping benefits. Some retailers already do this—for example, Wal-Mart exhorts customers to "Save Money. Live Better", Tesco reinforces the notion that "Every Little Helps", and the Dutch supermarket C1000 reminds customers that they are "Always Surprising, Always Advantageous." Finally, retailers should help shoppers frame and evoke store-specific choice goals before they enter the store.

Unplanned buying across retailers and retail formats. Hard discounters have dramatically altered the retail landscape of Western Europe and North America (Cleeren et al. 2010; Van Heerde, Gijsbrechts, and Pauwels 2008). This suggests that similar change could follow in other regions of the world, thus underscoring the need for further research on shopper behavior in this format. Traditional supermarkets and hard discounters vary on pricing, assortment, location, and store environment, but it is unclear how in-store shopper decisions vary across these formats and, in particular, how this affects unplanned buying. Because we control for differences across households and allow the same shopper to visit different stores and formats, our research begins to address this issue.

We know that when a shopper activates an abstract goal before shopping, he or she does more unplanned buying (H_1). Furthermore, in our data, when shoppers have more abstract goals (e.g., a major trip), they are also more likely to visit the hard discounters. Additional analysis shows that even though stores of all types benefit when the shopper enters with an abstract goal, full-service supermarkets receive an extra positive lift in unplanned buying, beyond that due to the abstract goal alone.[14] The marginal value of an incremental abstract goal trip is highest for these types of stores; indeed, the quantitative effects from our model imply that revenue increases of up to 10% per shopping trip are possible. This "interaction effect" implies an avenue for cooperation between branded-goods suppliers and full-service supermarkets. Branded-goods manufacturers that supply products that are bought on major trips struggle to increase volumes at retailers in which the share of these kinds of trips is low. Specific marketing initiatives (e.g., percentage savings on full basket value, in which manufacturers reimburse retailers for the discounts on their brands; multiple-category coupons on the manufacturer's brands at full service supermarkets) could lead a shopper to change his or her mission and deliver disproportionate benefits to both parties.

Alternative research methods. The comprehensive set of nontraditional measures (e.g., shopping trip, store choice goals) we used in this study significantly improves our ability to explain unplanned buying. This is true even though we control for many well-established drivers of unplanned buying, including demographics and in-store marketing. Shopping goals, store choice reasons, and shopper habits all contribute to influence the point-of-purchase in-store decisions. For example, the results pertaining to H_2 show that store-specific choice goals that drive traffic can have either positive or negative effects on incremental buying in the store. Retail managers will benefit from investing time and effort in understanding the shopping process in conjunction with shopping outcomes (e.g., purchase).

Limitations and Implications for Researchers

We investigate the effects of out-of-store factors on unplanned buying in one Western European market. Retail markets are in different stages of evolution, and a cross-country comparison of how what "shoppers bring to the store" affects unplanned buying is an important area for further research. We use panel data to show how trip-to-trip variation drives unplanned buying; however, our observation window is relatively short. (Unplanned buying is measurement intensive, so it is also necessary to consider possible sample attrition as time windows are lengthened.) Longitudinal analysis of steady-state shopping habits around unplanned buying is another important area for further research.

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[14] To test this formally, we reestimate our model with additional interaction terms. The coefficient on the interaction between the most abstract overall trip goal ("major trip") and choice of a traditional supermarket format is positive and significant (β_{trad} = .488, t-statistic = 2.79); the same coefficient for the hard discounter interaction is negative and not significant.

APPENDIX A
List of Product Categories Used in the Analysis (in Alphabetical Order)

Baby and toddler food
Baking and dessert products
Bath and shower products
Beer
Books, CDs, CD-ROM
Bread (including crackers, toast, biscuits, rusk) and rolls
Butter/margarine
Cake, biscuits, chocolate, sweets
Cereals (e.g., Corn Flakes, Cruesli)
Cheese
Chilled meals, pizzas
Chilled soup
Cleaning products
Clothes (including shoes, jewelry, watches)
Coffee and tea
Crisps, salted snacks, nuts
Deodorant
Dishwasher, hand soap/powder
Dry groceries (salt, spices, herbs)
Eggs
Fabric conditioner
Fish (including crustaceans and shellfish)
Flowers and plants
Fresh dairy products (drinks and desserts)
Fresh vegetables, fruit, potatoes
Frozen ice cream
Frozen meals, pizzas, snacks
Frozen vegetables/potato products/fish/meat
Household goods (e.g., dishcloths, brushes, candles, crockery, matches, light bulbs)
Long-life dairy products
Magazines
Mayonnaise and other cold sauces
Meals in a tin/jar/packet/box (including dinner kits)
Meat/chicken (including meat products)
Medicine, pills, supplements
Mixes for meals, packet mixes, cooking sauces
Moisturizing cream and body lotion
Diapers, other baby and toddler products
Office articles (including computers and printers)
Olive oil, vinegar
Other articles
Other products in a jar/tin (e.g., meat, fish, olives, gherkins)
Pasta, rice
Pastries and confectionary
Pet food, pet care
Sandwich filling (not chilled)
Sanitary products, panty liners
Shampoo and conditioner
Shaving products
Smoking materials
Soft drinks, juices, ice tea, sport drinks, diluting juice
Soups and bouillon (tinned/packet)
Sugar and condensed milk/creamer
Toilet paper, paper towels, tissues
Toothbrushes, toothpaste, oral care
Vegetables in a tin/jar
Washing powder/liquid
Wine and other alcoholic beverages

APPENDIX B
Questions Used to Derive Focal Measures

Measure	Question
H_1: Shopping Trip Goal	**What was the type of trip taken? (one answer)**
Shopping for special offers and promotions	•Special offers and promotions
Immediate consumption, to use straight away	•To use straight away, things forgotten, immediate needs
Same day, shopping for meals on the same day	•Shopping for meal consumed on same day or weekend
Fill-in trip, daily essentials, top-up shopping	•Daily essentials, top-up shopping
Major trip, weekly or less often	•Big, weekly, or less-than-weekly grocery shop
H_2: Store Choice Goals	**What are the reasons for visiting this store now? (more than one answer)**
a Low prices	•Low prices
a Attractive promotions and special offers	•Attractive promotions and special offers
b Large assortment	•Large/wide range of products
c Friendly store, good service	•Friendly store
d Store offers one-stop shopping	•Everything I need in one place
e I can visit other stores at the same time	•I can visit other stores at the same time
f No crowds in the store	•No crowds/queues
H_3: Interaction Between Out-of-Store Exposure and Use of In-Store Marketing Materials (H_3)	**Did you see special offers before going into the store, if yes, where? (more than one answer)**
Special offers seen in the newspaper	•In the newspaper
Special offers seen in the leaflet delivered to home	•From a leaflet of the store that is delivered at home
Special offers seen on television, as heard on the radio, as seen in coupons, or as communicated by friends and family	•On television, on the radio, in coupons, from friends or family, and other
Stay informed through leaflet about offers	•Do you stay informed about special offers or advertisements from a leaflet in the shop?
Control Variables[a]	
Special offers seen at the shelf	•Were special offers seen during the shopping trip at the shelf?
Special offers seen on display away from shelf	•Were special offers seen during the shopping trip at a display away from the shelf?

[a] Other control variables have straightforward definitions, and we omit them for space, they are available on request

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Philipp Schmitt, Bernd Skiera, & Christophe Van den Bulte

Referral Programs and Customer Value

Referral programs have become a popular way to acquire customers Yet there is no evidence to date that customers acquired through such programs are more valuable than other customers The authors address this gap and investigate the extent to which referred customers are more profitable and more loyal Tracking approximately 10,000 customers of a leading German bank for almost three years, the authors find that referred customers (1) have a higher contribution margin, though this difference erodes over time, (2) have a higher retention rate, and this difference persists over time, and (3) are more valuable in both the short and the long run The average value of a referred customer is at least 16% higher than that of a nonreferred customer with similar demographics and time of acquisition However, the size of the value differential varies across customer segments, therefore, firms should use a selective approach for their referral programs

Keywords customer referral programs, customer loyalty, customer value, customer management, word of mouth, social networks

Word of mouth (WOM) has reemerged as an important marketing phenomenon, and its use as a customer acquisition method has begun to attract renewed interest (e g , Godes and Mayzlin 2009, Iyengar, Van den Bulte, and Valente 2011) Traditionally, WOM's appeal has been in the belief that it is cheaper than other acquisition methods A few recent studies have documented that customers acquired through WOM also tend to churn less than customers acquired through traditional channels and that they tend to bring in additional customers through their own WOM (Choi 2009, Trusov, Bucklin, and Pauwels 2009, Villanueva, Yoo, and Hanssens 2008) Villanueva, Yoo, and Hanssens (2008) further suggest that customers acquired through WOM can generate more revenue for the firm than customers acquired through traditional marketing efforts

From a managerial point of view, these findings are encouraging and suggest purposely stimulating WOM to acquire more customers However, there are concerns that firm-stimulated WOM may be substantially less effective than organic WOM in generating valuable customers (Trusov, Bucklin, and Pauwels 2009, Van den Bulte 2010) because (1) targeted prospects may be suspicious of stimulated WOM efforts, (2) such efforts often involve a monetary reward for the referrer, who, as a result, may seem less trustworthy, (3) programs providing economic benefits tend not to be sustainable (Lewis 2006), (4) unlike organic WOM, stimulated WOM is not free, raising questions about cost effectiveness, and (5) stimulated WOM is prone to abuse by opportunistic referrers

The uncertainty about the benefits of stimulated WOM in customer acquisition is frustrating for managers facing demands to increase their marketing return on investment and considering whether to use this method Our study addresses this managerial issue by investigating the value of customers acquired through stimulated WOM and comparing it with the value of customers acquired through other methods We do so in the context of a specific WOM marketing practice that is gaining prominence, namely, referral programs in which the firm rewards existing customers for bringing in new customers Although these programs are typically viewed as an attractive way to acquire customers, their benefits are often viewed to be their targetability and cost effectiveness (Mummert 2000) We broaden this view by assessing the value of customers acquired through these types of programs

Specifically, we answer four questions (1) Are customers acquired through a referral program more valuable than other customers? (2) Is the difference in customer value large enough to cover the costs of such stimulated WOM customer acquisition efforts? (3) Are customers acquired through a referral program more valuable because they generate higher margins, exhibit higher retention, or both? and (4) Do differences in margins and retention remain stable, or do they erode? The answers to the last two questions provide deeper insight into what might be driving the value differential

We answer these four questions using panel data on all 5181 customers that a leading German bank acquired

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ISSN 0022-2429 (print), 1547-7185 (electronic)

through its referral program (referred customers) between January 2006 and December 2006 and a random sample of 4633 customers the same bank acquired through other methods (nonreferred customers) over the same period For both groups of customers, we track profitability (measured as contribution margin) and loyalty (measured as retention) at the individual level from the date of acquisition until September 2008 The total observation period spans 33 months We use two metrics of customer value (1) the present value of the actually observed contribution margins realized within the data window and (2) the expected present value over a period of six years from the day of acquisition Although our study is limited to a single research site, as is common for studies that require rich and confidential data, the methodology and findings are of broad interest Customer referral programs are gaining popularity in many industries, including financial services, hotels, automobiles, newspapers, and contact lenses (Ryu and Feick 2007)

We make the following contributions First, we provide empirical evidence that a referral program, a form of stimulated WOM, is an attractive way to acquire customers Referred customers exhibit higher contribution margins, retention, and customer value Second, building on our finding that differences in contribution margin erode over time whereas those in retention do not, we document that referred customers are more valuable in both the short and the long run Third, we show that the referral effect need not be present in every customer segment Finally, we illustrate how the type of analysis we conduct enables firms to calculate the return on investment and the upper bound for the reward in their customer referral programs

We proceed by describing referral programs and developing our hypotheses A description of the research setting, the data, and the model specifications follows Then, we report the results Finally, we discuss implications for practice, the limitations, and opportunities for further research

Customer Referral Programs

Customer referral programs are a form of stimulated WOM that provides incentives to existing customers to bring in new customers An important requirement for such programs is that individual purchase or service histories are available so the firm can ascertain whether a referred customer is indeed a new rather than an existing or a former customer

Referral programs have three distinctive characteristics First, they are deliberately initiated, actively managed, and continuously controlled by the firm, which is impossible or very difficult with organic WOM activities such as spontaneous customer conversations and blogs Second, the key idea is to use the social connections of existing customers with noncustomers to convert the latter Third, to make this conversion happen, the firm offers the existing customer a reward for bringing in new customers

Although leveraging the social ties of customers with noncustomers to acquire the latter is not unique to customer referral programs, the three distinctive characteristics of these programs set them apart from other forms of network-based marketing (Van den Bulte and Wuyts 2007) Unlike organic WOM, the firm actively manages and monitors referral programs Unlike most forms of buzz and viral marketing, the source of social influence is limited to existing customers rather than anyone who knows about the brand or event Unlike multilevel marketing, existing customers are rewarded only for bringing in new customers They do not perform any other sales function (e g , hosting parties) and do not generate any income as a function of subsequent sales Consequently, referral programs do not carry the stigma of exploiting social ties for mercantile purposes, as multilevel marketing does (Biggart 1989)

In most referral programs, the reward is given regardless of how long the new referred customers stay with the firm Such programs are prone to abuse by customers Although the firm does not commit to accept every referral, the incentive structure combined with imperfect screening by the firm creates the potential for abuse in which existing customers are rewarded for referring low-quality customers This kind of moral hazard is less likely to occur with WOM campaigns that do not involve monetary rewards conditional on customer recruitment

Existing studies of customer referral programs have provided guidance about when rewards should be offered (Biyalogorsky, Gerstner, and Libai 2001, Kornish and Li 2010), have quantified the impact of rewards and tie strength on referral likelihood (Ryu and Feick 2007, Wirtz and Chew 2002), and have quantified the monetary value of making a referral (Helm 2003, Kumar, Petersen, and Leone 2007, 2010) The key managerial question of the (differential) value of customers acquired through referral programs has not yet been addressed

Hypotheses

Because referral programs are a customer acquisition method, an important metric to assess their effectiveness is the value of the customers they acquire Additional insights come from investigating differences between referred and nonreferred customers in contribution margins and retention rates, the two main components of customer value (e g , Gupta and Zeithaml 2006, Wiesel, Skiera, and Villanueva 2008)

Our hypotheses regarding these customer metrics of managerial interest are informed by prior work in economics and sociology on employee referral (e g , Coverdill 1998, Rees 1966), especially the work of Fernandez, Castilla, and Moore (2000), Neckerman and Fernandez (2003), and Castilla (2005) on the quality of employee referral programs These studies show that the benefits of such programs are realized through distinct mechanisms, of which better matching and social enrichment appear particularly relevant to marketers Better matching is the phenomenon that referrals fit with the firm better than nonreferrals, and social enrichment is the phenomenon that the relationship of the referral to the firm is enriched by the presence of a common third party (i e , the referrer)

Customer and employees referral programs are likely to be subject to similar mechanisms because they share the three distinctive characteristics of having active management, using the social connections of existing contacts, and offering rewards with the risk of abuse Selecting a new employer or bank both are high-involvement decisions involving a fair amount of uncertainty Although some basic banking products, such as checking accounts, are well known to most customers, the wider set of financial services that banks provide are considered experience goods rather than search goods (e g , Bolton, Freixas, and Shapiro 2007, Parasuraman, Zeithaml, and Berry 1985) The recurrent losses of many private investors indicate that many people are not very skilled at assessing complex bank offerings

We use the better matching and social enrichment mechanisms to develop and motivate our hypotheses However, our goal is to document managerially relevant differences in contribution margin, retention, and customer value rather than to test those specific mechanisms The mechanisms are only possible explanations for the differences we document

Differences in Contribution Margin

Several characteristics of social dynamics in human networks (e g , Van den Bulte and Wuyts 2007) imply that referred customers may match up with the firm better than other newly acquired customers The first is reciprocity Because referring customers receive a reward, norms of reciprocity may make nonopportunistic customers feel obliged to bring in new customers who they think may be valuable to the firm (Gouldner 1960) This process explains Neckerman and Fernandez's (2003) finding that referrals for which the referrer claimed a fee had lower turnover than referrals for which no fee was claimed The second social dynamic likely to be at work is triadic balance If the main function of the program is simply to nudge customers into making referrals without much consideration for the monetary reward (Thaler and Sunstein 2008), principles of triadic balance will make existing customers more likely to bring in others who they believe would match well with what the firm has to offer A third social dynamic likely to be at work is homophily—the tendency for people to interact with people like them Whereas reciprocity and triadic balance imply that referrers are diligent and active in screening and matching peers to firms, homophily implies that customers are likely to refer others who are similar to themselves Because existing customers have an above-average chance of being a good match (otherwise, they would not be customers), firms may benefit from referral programs through "passive" homophily-based matching rather than only deliberate "active" screening-based matching by referrers (Kornish and Li 2010, Montgomery 1991, Rees 1966)

Acquisition through referral can also result in informational advantages, making referred customers more profitable than other customers Referred customers are likely to have discussed the firm's offerings with their referrer As a result, they are likely to use its products more extensively than novice customers who take a more cautious approach in building involvement Informational advantages to the firm can also result if people refer others similar to themselves on dimensions that are relevant to the enjoyment of the product or service but are not immediately observable to the firm (Kornish and Li 2010) Examples for financial services include risk aversion and a sense of fiscal responsibility In these situations, the firm can make inferences from the observed behavior of the referrers about the products in which the referred customers will be most interested (e g , Guseva 2008) As a result, the firm is able to serve the referred customer in a tailored way early on, something that takes time to learn for other newly acquired customers Because of this informational advantage, the firm should be able to generate a higher contribution margin from referred customers at the beginning of the relationship

However, the advantages of better matching and better information should gradually vanish As nonreferred customers accumulate experience with the firm, they should become equally well informed about the firm's offerings and procedures Likewise, the firm should be able to use the purchase and service history of the nonreferred customers to serve them better Furthermore, nonreferred customers who are not a good match for the firm are more likely to leave Consequently, both revenues and costs of referred and nonreferred customer should converge, eliminating the difference in contribution margin over time Thus

> H_1 (a) The average contribution margin of a customer acquired through a referral program is higher than that of a customer acquired through other methods, but (b) this difference becomes smaller over time

Differences in Retention

Social enrichment is another mechanism that may increase the value of referred customers The argument is that the relationship with the firm is enriched because a family member or friend is a customer of the same firm (Castilla 2005, Fernandez, Castilla, and Moore 2000) Having a person close to oneself in a similar position (i e , being a customer of the same firm) should increase the person's trust in the firm and strengthen his or her emotional bond with it, as both balance theory and social closure theory predict (Van den Bulte and Wuyts 2007) This prediction is also consistent with findings that customers reflecting on their affect toward a firm mention friends who are customers with the same firm (Yim, Tse, and Chan 2008) Such relationships should be particularly relevant in a banking context, in which emotions and trust play important roles in the customer–firm relationship (e g , Edwards and Day 2005, Fleming, Coffman, and Harter 2005) In short, referred customers are likely to have a stronger sense of commitment and attachment to the firm This implies that referred customers are less likely to churn than nonreferred customers, provided that their referrer does not churn either The latter condition is likely to hold Referrers typically have a greater long-term likelihood of staying, which is why intention to refer is frequently used as an indicator of loyalty (Gupta and Zeithaml 2006)

Although the informational advantage of a referred customer decreases over time as direct experience substitutes for social learning, there is no reason to expect erosion in the affective bonding underlying the social enrichment mechanism Consequently, the erosion of the differential expected in contribution margin need not apply to retention Therefore, we state the following

H_2 (a) The average retention of a customer acquired through a referral program is higher than that of a customer acquired through other methods, and (b) this difference does not become smaller over time.

Differences in Customer Value

If H_1 and H_2 hold *and* if the erosion of contribution margins does not outweigh the initial difference in margins and the persisting difference in retention, the following should hold as well.

H_3 The average value of a customer acquired through a referral program is higher than that of a customer acquired through other methods.

H_3 can hold even when H_1 and H_2 do not, because it is possible for the differences in both margins and retention to be small but for their combined effect to be sizable and significant. Another reason to test H_3 on customer value, in addition to H_1 and H_2 on margins and retention, is that customer value is what managers should care about most.

Although we base our prediction on sound theoretical arguments, the posited effects are not as obvious as they may seem because there are several competing forces at work. First, the prospect of earning a referral fee may induce referrers to pressure their peers to become customers without giving much consideration to whether the firm actually matches their peers' needs. Second, the relationship between the referred customer and his or her referrer, which is necessary for social enrichment to operate, comes with an inherent risk. When referrers defect, the customers they brought in may become more likely to leave as well. Although it seems unlikely that referrers as a whole are more prone to churn than the average customer, the risk of contagious defection should not be ignored altogether. Third, an abuse of the referral program by customers who are interested only in the monetary reward is probably the most important reason for practitioners' skepticism. This is illustrated by TiVo's termination of its referral program as a result of frequent abuses (ZatzNotFunny 2008).

Support for our hypotheses would allow us to conclude that the positive effects outweigh the negative ones. In addition, the empirical analysis provides not only a test of the hypotheses but also an estimate of the size of the customer value differential. Firms can use the latter to put a maximum value on the reward to be paid out as part of their referral program.

Methods

Research Setting

We use data from a leading German bank, whose name we do not divulge for confidentiality reasons. The data capture all customers acquired through the bank's referral program between January 2006 and December 2006 and a random sample of customers acquired through other methods (e.g., direct mail, advertising) over the same period. The latter group may include customers affected by organic WOM for which the bank did not pay any fee. To the extent that the value of customers acquired through organic WOM is equal to or greater than that of customers acquired through the referral program, our results underestimate the value differential between WOM and non-WOM customers. Regardless, we correctly estimate the value differential between customers acquired through the referral program and all other customers for whom no referral fee was paid.

The observation period spans from January 2006 to September 2008 (33 months), and the data on each individual customer include the day of acquisition, the day of leaving the bank (if applicable), the contribution margin in each year, and some demographics. In total, we have data on 5181 referred and 4633 nonreferred customers. Because the referral program was used only in a business-to-consumer context, all customers are individual people.

The referral program was communicated to existing customers through staff and flyers in the branches and through mailings.[1] The procedure was straightforward. Every existing customer who brought in a new customer received a reward of 25 euros in the form of a voucher that could be used at several well-known German retailers.[2] Except for opening an account, the referred customer did not need to meet any prerequisites (e.g., minimum amount of assets, minimum stay) for the referrer to receive the reward.

In addition, 2006 was not an unusual year in terms of customer acquisition, and the bank's management was confident that findings about customers acquired in 2006 would be applicable to customers acquired in earlier and later years. Proprietary information of the bank shows that its customers are similar to those of other leading European banks. Regarding the usage of its referral program and the response of its customers to it, no differences with other firms are apparent either.

Dependent Variables

Daily contribution margin is the individual contribution margin on a daily basis. It is the total contribution margin the customer generates in the observation period, divided by the total number of days the customer was with the bank (duration). This per diem scaling ensures the comparability of the contribution margin of customers with different observed (and possible censored) durations. The contribution margin equals revenue (interest and fees) less direct costs (e.g., interest expenses, sales commissions, brokerage, trading costs). The acquisition costs are not subtracted from the contribution margin. We also compute a time-varying version of daily contribution margin by dividing the contribution margin generated by the customer in a particular year (2006, 2007, 2008) by the number of days the customer was with the bank in that year.

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[1] These mailings went to the referring customers. Mailings to which the nonreferred customers responded were sent directly to them.

[2] Although confidentiality concerns preclude us from reporting the average cost of acquisition for referral and nonreferral customers, we can report that the total acquisition cost for referred customers (including not only the referral fee but also the additional administrative costs of record keeping, paying out, and so on) is on average approximately 20 euros lower than that for nonreferred customers acquired through mailings.

Duration is the total number of days the customer was observed to be with the bank. It is the basis for analyzing retention.

We calculate two measures of customer value, one based only on observed data and the other based on both observed data and predictions. Observed customer value is the present value of all actual contribution margins the customer generated during the whole observation period (e.g., 33 months for retained customers acquired in January 2006). This metric is affected by both contribution margin and retention because a customer generates no margins after leaving the bank. Our second metric, customer lifetime value, is the present value of all contribution margins, both actual and predicted, of the customer within the six-year span following the day of acquisition.[3] For customers who churned during the observation period, customer lifetime value equals observed customer value because their predicted value is 0. The formulas are as follows:

$$(1)\quad \text{Customer Lifetime Value}_i = \text{Observed Customer Value}_i + \text{Predicted Customer Value}_i,$$

$$(2)\quad \text{Observed Customer Value}_i = \sum_{s=1}^{\text{Dur}_i} \frac{\text{OM}_{is}}{(1+r)^{s/12}}, \text{ and}$$

$$(3)\quad \text{Predicted Customer Value}_i = \delta_i \sum_{s=\text{Dur}_i+1}^{72} \frac{\text{PM}_{is} \times \text{PA}_{is}}{(1+r)^{s/12}},$$

where OM_{is} is the observed monthly contribution margin of customer i in the sth month after acquisition (calculated from the observed annual contribution margin and the observed duration), Dur_i is the customer's observed lifetime with the bank in months, δ_i is a dummy censoring variable that indicates whether the customer was still with the bank by the end of the observation period, PM_{is} is the predicted monthly contribution margin of customer i in the sth month after acquisition, PA_{is} is the predicted probability that customer i is still "alive" (i.e., with the bank) in that month, and r is the firm-specific annual discount rate of 11.5%.[4] The present value reflects what the customer is worth at the day of acquisition.

Independent Variables

The independent variable of central interest is referral program, a binary indicator that takes the value 1 for referred customers (i.e., those who were acquired through the referral program) and 0 for nonreferred customers. To improve the comparability of referred and nonreferred customers, we control for the demographic variables age, sex (dummy variable, with women coded as 1 and men coded as 0), and marital status (dummy variables for married, divorced/separated, single, and widowed, with no answer as the base category). We also control for the customer's month of acquisition (11 dummy variables for each month, with December 2006 as the base category).

To assess the robustness of the difference in customer value, we also conduct separate analyses for the two key segments of the bank: retail customers with standard financial needs and nonretail customers with significant assets or requiring more sophisticated financial advice. This segmentation scheme the bank uses is based on a comprehensive analysis of both financial data (e.g., assets invested with the bank, monthly checking account balance) and demographic information (e.g., profession, place of residence). The segments form the basis for all strategic customer-related decisions of the bank.

Descriptive Statistics

The sample includes several customers with an extremely high daily contribution margin that is up to 80 standard deviations above the mean and median. Such extreme data points can influence comparisons of means and regression results, so we purify the data using the standard DFBETA and DFFIT criteria to identify influence points (Belsley, Kuh, and Welsch 1980). This procedure led to the deletion of 172 referred customers (3.3% of the original 5181 referred customers) and 147 nonreferred customers (3.2% of the original 4633 nonreferred customers). As we report in the subsection "Robustness Checks," testing the hypotheses without deleting the influence points results in larger differences and provides stronger support for the hypotheses. Yet the size estimates obtained without the influence points are more informative.

Table 1 presents the means, standard deviations, and the correlation matrix for the purified sample of 9495 customers. As the nonzero correlations between the referral program variable and the various demographic and time of acquisition variables indicate, the groups of referred and nonreferred customers are not perfectly matched on demographics and time of acquisition. Thus, it is desirable to control for these differences.

Figure 1 plots the average daily contribution margin for the referred and nonreferred customers of the purified sample, for 2006, 2007, and 2008. The pattern is encouraging: Referred customers tend to generate higher margins, and the margins tend to erode more quickly among referred customers, such that the margin differential is narrower in 2008 than in 2006 (8 cents versus 18 cents per day). Similarly, as Figure 2 shows, after about a year, the retention rate of referred customers is higher, and this is the case regardless of duration. However, controlling for differences in demographics and time of acquisition is necessary to draw conclusions more confidently.

Statistical Models

To estimate the difference in contribution margin between acquisition modes (H_{1a}), we use a regression model with the following specification:

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[3] This way, we do not need to predict margins and retention rates beyond four years after the end of the data window, and the resulting customer lifetime values are unlikely to be overly affected by forecasting error (Kumar and Shah 2009).

[4] We base the discount rate on the capital asset pricing model. We assume a risk-free interest rate of 4.25% (Svensson 1994), a 5% market risk rate based on the Institute of German Accountants, and a firm-specific beta of 1.45 based on Thomson Financial Datastream.

TABLE 1
Descriptive Statistics

	Units	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1 Referral program	0–1	53	50	1 00																					
2 Observed customer value	Euros	210 66	336 15	02	1 00																				
3 Customer lifetime value	Euros	255 75	338 95	01	1 00	1 00																			
4 Daily contribution margin	Euros per day	33	50	04	98	98	1 00																		
5 Duration	Days	751 05	119 48	–17	18	21	09	1 00																	
6 Age	Years	42 90	17 47	–20	10	09	10	–01	1 00																
7 Female	0–1	54	50	07	01	01	01	01	05	1 00															
8 Married	0–1	39	49	–15	–02	–03	–02	–03	43	01	1 00														
9 Single	0–1	44	50	16	–05	–04	–05	01	–65	–10	–70	1 00													
10 Divorced	0–1	10	30	00	03	03	03	02	13	06	–26	–29	1 00												
11 Widowed	0–1	05	22	–05	11	11	10	03	36	14	–18	–20	–07	1 00											
12 Acquired January 2006	0–1	03	17	–17	07	08	03	31	02	00	01	–03	–00	04	1 00										
13 Acquired February 2006	0–1	03	18	–18	02	03	–01	27	05	–02	04	–04	–00	01	–03	1 00									
14 Acquired March 2006	0–1	06	24	–18	04	04	01	29	07	–01	05	–04	–00	00	–04	–05	1 00								
15 Acquired April 2006	0–1	06	23	02	04	04	02	24	–01	–00	–03	02	02	01	–04	–05	–06	1 00							
16 Acquired May 2006	0–1	07	26	03	03	04	01	22	–02	–01	–01	02	–01	–02	–05	–05	–07	–07	1 00						
17 Acquired June 2006	0–1	08	28	–01	02	02	01	14	02	02	–01	–01	00	04	–05	–06	–08	–07	–08	1 00					
18 Acquired July 2006	0–1	10	30	00	01	01	01	08	02	–00	00	–02	03	–00	–06	–06	–09	–08	–09	–10	1 00				
19 Acquired August 2006	0–1	11	31	06	–00	–00	–00	–01	–08	00	–06	05	02	–02	–06	–06	–09	–08	–09	–10	–12	1 00			
20 Acquired September 2006	0–1	08	27	07	00	00	01	–08	–06	01	–03	04	–00	–02	–05	–06	–08	–07	–08	–09	–10	–10	1 00		
21 Acquired October 2006	0–1	12	33	04	–03	–04	–01	–22	01	01	02	–00	–01	–01	–07	–07	–09	–09	–10	–11	–13	–13	–11	1 00	
22 Acquired November 2006	0–1	12	33	04	–05	–06	–02	–31	–00	–03	01	–01	–01	–00	–07	–07	–09	–09	–10	–11	–13	–13	–11	–14	1 00
23 Nonretail customers	0–1	12	32	–03	27	27	27	–00	03	00	01	–01	–03	00	02	–00	01	01	–04	00	–01	–02	–02	–03	00

Notes N = 9495 All correlations with absolute value of 02 or higher are significant at the 5% level Differences in observed duration across customers are strongly affected by differences in the month of acquisition As a result, the zero-order correlations of duration with other variables that are also correlated with month of acquisition can be misleading For example, the correlation between duration and referral program changes from – 17 to 03 after we control for month of acquisition

FIGURE 1
Average Values of Daily Contribution Margin for Referred and Nonreferred Customers by Year

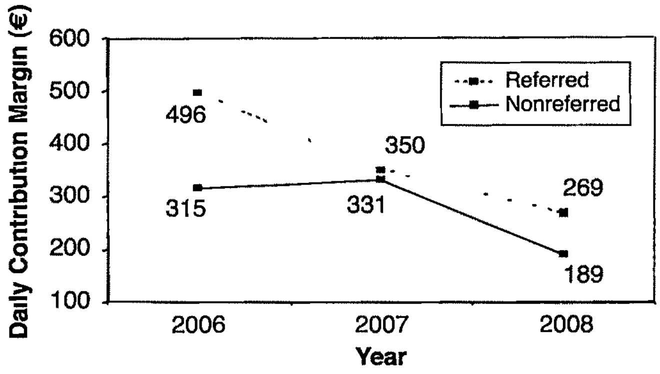
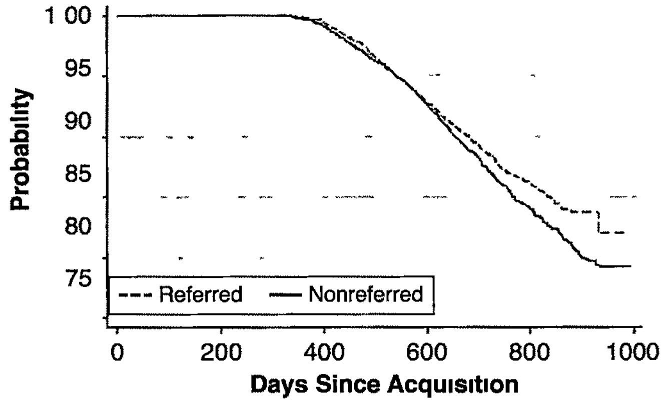


FIGURE 2
Probability That Referred and Nonreferred Customers Have Remained with the Firm (Kaplan–Meier Estimates of Survivor Functions)



Notes: Customers were able to leave immediately after joining, but only a handful did so. The earliest defection took place after 64 days, and only 27 customers left within the first year of joining.

(4)
$$DCM_i = \alpha + \beta_1 RP_i + \sum_{k=2} \beta_k X_{ik} + \varepsilon_i,$$

where i indexes the customer, DCM is daily contribution margin over the observation period, RP is the binary variable representing the referral program, X represents the control variables, and the errors ε_i have a mean of zero and are independent of the included covariates. We use ordinary least squares to estimate the coefficients and compute Huber–White heteroskedasticity-consistent standard errors (Breusch–Pagan test, $p < .001$). The size of our sample implies that we do not need to assume that the random shocks are normally distributed for statistical inference using t- and F-statistics (e.g., Wooldridge 2002, pp. 167–71).

To test whether difference in margin decreases the longer the customer has been with the bank (H_{1b}), we use a fixed-effects specification estimated with ordinary least squares:

(5)
$$DCM_{it} = \alpha_i + \beta_2 T_{it} + \beta_3 RP_i \times T_{it} + \eta_t + \varepsilon_{it},$$

where i indexes the customer, t indexes the year (t = 1, 2, 3), DCM_{it} is the daily contribution margin of customer i in year t (i.e., the total contribution margin generated by customer i in year t divided by the number of days the customer was with the firm during year t), T_{it} is the cumulative number of days customer i had been with the bank by the end of year t, η_t is a year-specific fixed effect, and the customer-specific intercepts α_i are not constrained to follow any specific distribution but capture all individual-specific, time-invariant differences, including the effect of acquisition through the referral program (RP) and that of the control variables X. The errors ε_{it} have a mean of zero and are independent of the covariates. The β_3 coefficient captures the proper interaction effect because the β_1 effect of RP is now captured through the fixed effects. Again, we use the robust Huber–White standard errors (Breusch–Pagan test, $p < .001$).

To assess the difference in retention between acquisition modes, we use the Cox proportional hazard model. This enables us to analyze right-censored duration data and to exploit the fine-grained measurement of churn at the daily level without imposing any restriction on how the average churn rate evolves over time. Furthermore, the nonparametric baseline hazard makes the model robust to unobserved heterogeneity in all but extreme cases (e.g., Meyer 1990). We can represent the model to test H_{2a} as follows:

(6)
$$\ln[h_i(t)] = \alpha(t) + \beta_1 RP_i + \sum_{k=2} \beta_k X_{ik},$$

where i indexes the customer, t indexes the amount of days since the customer joined the bank, $h_i(t)$ is the hazard rate for the customer's defection, and $\alpha(t)$ is the log of the nonparametric baseline hazard common across all customers. To test whether the difference in churn propensity changes over time (H_{2b}), we extend Equation 6 with the interaction between RP_i and ln(t). The latter is also a test of whether the RP effect meets the proportionality assumption (e.g., Blossfeld, Hamerle, and Mayer 1989), but we use it here to test a hypothesis of substantive interest.

To test H_3 and assess the difference in customer value, we again use the regression model in Equation 4, but now with observed customer value as the dependent variable. Theoretical claims can be subjected to empirical validation or refutation only by comparing hypothesized effects with actual data. As a result, the truth content of H_3 can be validly tested using the observed customer value as the dependent variable but not customer lifetime value, which itself is based on predictions. Still, given the right censoring of our data and the hypothesized erosion of the margin differential over time, it is informative also to perform a similar analysis with the six-year customer lifetime value as the dependent variable. To calculate the predicted values entering the customer lifetime value metric, we use (1) predicted annual contribution margins from a fixed-effects model, such as that specified in Equation 5, but one in which we allow all parameters to vary between referred and nonreferred customers, and (2) predicted annual survival rates from a parametric Weibull hazard model because the nonparametric baseline hazard of the Cox model does not allow for forecasts.[5]

Results

Is the Contribution Margin of Referred Customers Higher?

In accordance with H_{1a}, referred customers are, on average, 4 5 cents per day more profitable than other customers (Mann–Whitney test, $p < 001$) The difference is even larger after we control for differences in customer demographics and time of acquisition, variables on which the two groups of customers are not perfectly matched The first column of Table 2 reports the coefficients of Equation 4, controlling for age, sex, marital status, and month of acquisition Whereas the average contribution margin of nonreferred customers in our sample is 30 cents per day, customers acquired through the referral program have a margin that is 7 6 cents per day or 27 74 euros per year higher ($p < 001$), an increase of approximately 25% Among the covariates, older age and being widowed are associated with a higher contribution margin, whereas being married is associated with a lower contribution margin The pattern in the monthly coefficients suggests that the bank was more successful in acquiring profitable customers in some months than in others The R-square is low, indicating that important elements other than acquisition method, acquisition time, and demographics drive customer profitability Although the large unexplained variance depresses the power of statistical tests and thus makes it more difficult to reject the null hypothesis, H_{1a} is strongly supported

Does the Contribution Margin of Referred Customers Remain Higher?

H_{1b} predicts that the difference in contribution margin erodes the longer a customer stays with the bank The results support this Column 2 of Table 2 reports the coefficients of the fixed-effects model in Equation 5 There is a significant, negative interaction between referral program and the number of days the customer has been with the bank The difference in daily contribution margin between referred and nonreferred customers decreases by 23 1 cents per 1000 days, or 8 4 cents per year

The individual-level fixed effects (intercepts) in the model capture the expected daily contribution margin when the included covariates equal zero (i e , on the day of acquisition in 2006) Regression of these 9495 fixed-effects estimates on the referral program and control variables indicates that a referred customer has an expected contribution margin on the first day of joining the firm that is 19 8 cents higher than that of a nonreferred customer with similar demographics and time of acquisition [6] This implies that the expected contribution margin advantage of a referred customer disappears after 857 days (198/ 000231), or approximately 29 months after the customer joined the bank

Is the Retention of Referred Customers Higher?

To test whether the retention rate is higher for referred than for nonreferred customers (H_{2a}), we use the Cox proportional hazard model specified in Equation 6 The results reveal that the association between referral program and churn (i e , nonretention) is significantly negative and sizable Use of only referral program as the explanatory variable shows that at any point in time, customers acquired through the referral program who are still with the firm are approximately 13% less likely to defect than nonreferred customers who are still with the firm After we control for differences in demographics and month of acquisition (see Column 3 of Table 2), the effect size increases to approximately –18% [exp(– 198) – 1] This multiplicative effect of 18% is relative to a baseline hazard that is small As the survival curves in Figure 2 show, the probability of being an active customer (i e , a nonchurning customer) after 33 months is 82 0% for referred customers and 79 2% for nonreferred customers Age is associated with a higher churn rate, whereas the opposite holds for being widowed There is also a trend in the monthly coefficients, indicating that customers acquired late in 2006 (especially in September and later) exhibit more churn than those acquired earlier This trend is a cohort effect and not duration dependence, which is captured in the nonparametric baseline hazard

Does the Retention of Referred Customers Remain Higher?

We also assess whether the difference in retention varies over the customer's lifetime (H_{2b}) To do so, we extend the Cox model with an interaction between the referral program variable and the natural logarithm of the customer's duration with the bank (see Column 4 of Table 2) The interaction is not significant, and the model fit does not improve significantly ($p > 05$) So, although there is an eroding difference between referred and nonreferred customers in contribution margin, there is no such erosion for customer retention [7]

Are Referred Customers More Valuable?

Using the observed customer value, we find that, on average, referred customers are 18 euros more valuable (Mann–Whitney test, $p < 001$) After we control for demographics and month of acquisition, the difference increases to 49 euros (Column 5 of Table 2, $p < 001$) A referred cus-

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[5] In-sample parameter estimates from the Cox and Weibull models are nearly identical The reason for using the Cox model in testing the hypotheses is the absence of a restrictive parametric assumption on the duration dependence

[6] This difference in daily contribution margin of 19 8 cents is close but not identical to the 18 cents difference between the two groups of customers in 2006, shown in Figure 1 The small disparity between the two values occurs because the former controls for differences in demographics and time of acquisition, whereas the latter does not Another reason for the disparity is that the former is the difference on the day of acquisition, whereas the latter is the difference on an average day in 2006

[7] Note that in the model with the interaction term included, the coefficient of referral program (917, $p > 05$) is not the average difference between referred and nonreferred customers anymore but rather the difference between the two groups on the day of acquisition (i e , when the interaction variable Log(duration) equals 0, see Irwin and McClelland 2001) Thus, the insignificant coefficient of referral program in the model including the interaction term does not invalidate the finding of a significant difference in retention between the two groups posited in H_{2a}

TABLE 2
Main Results for Differences in Daily Contribution Margin, Churn (i.e., the Converse of Retention), Observed Customer Value, and Customer Lifetime Value

	H_{1a}	H_{1b}	H_{2a}	H_{2b}	H_3	H_3
	Daily Contribution Margin	Daily Contribution Margin (Time Varying)	Churn	Churn (Time Varying)	Observed Customer Value	Customer Lifetime Value
Referral program	076***	—a	– 198**	917	49 157***	39 906***
	(010)	—	(059)	(1 479)	(7 096)	7 152
Age	003***	—	011**	011***	1 879***	1 626***
	(000)	—	(002)	(002)	(283)	(285)
Female	– 009	—	– 034	– 034	–4 459	–3 376
	(010)	—	(056)	(056)	(6 902)	(6 958)
Sarried	– 078*	—	– 027	– 028	–52 798*	–52 258*
	(033)	—	(166)	(166)	(22 427)	(22 563)
Single	– 040	—	– 163	– 163	–27 306	–24 035
	(033)	—	(167)	(167)	(22 573)	(22 706)
Divorced	– 016	—	– 176	– 177	–12 278	–7 656
	(037)	—	(183)	(183)	(24 776)	(24 933)
Widowed	111*	—	– 470*	– 470*	76 085*	87 249**
	(046)	—	(212)	(212)	(31 128)	(31 355)
Acquired January 2006	172***	—	–1 828**	–1 833***	228 228***	247 960***
	(039)	—	(201)	(201)	(31 589)	(31 666)
Acquired February 2006	063*	—	–1 365**	–1 369***	127 706***	133 591***
	(031)	—	(160)	(159)	(24 172)	(24 411)
Acquired March 2006	089**	—	–1 155**	–1 157***	136 393***	135 755***
	(026)	—	(126)	(126)	(19 103)	(19 280)
Acquired April 2006	084**	—	–1 215**	–1 208***	124 793***	123 153***
	(027)	—	(140)	(140)	(18 753)	(18 895)
Acquired May 2006	082**	—	–1 529**	–1 524***	114 302***	119 426***
	(025)	—	(150)	(150)	(16 791)	(16 909)
Acquired June 2006	066**	—	–1 016**	–1 013***	91 090***	92 643***
	(022)	—	(122)	(122)	(14 326)	(14 475)
Acquired July 2006	062**	—	–1 026**	–1 023***	79 574***	84 200***
	(021)	—	(122)	(122)	(12 717)	(12 839)
Acquired August 2006	059**	—	– 841**	– 838***	69 213***	73 167***
	(020)	—	(119)	(119)	(12 111)	(12 233)
Acquired September 2006	077**	—	– 679**	– 676***	72 213***	76 352***
	(022)	—	(126)	(126)	(13 199)	(13 335)
Acquired October 2006	037	—	– 434**	– 432***	36 602*	39 391***
	(020)	—	(108)	(108)	(11 133)	(11 257)
Acquired November 2006	021	—	– 217*	– 215*	19 252	20 551
	(019)	—	(105)	(105)	(10 497)	(10 632)
Year 2007 (dummy)		–1 306				
		(732)				
Year 2008 (dummy)		–2 259				
		(1 258)				
Cumulative Days (in thousands)		3 513				
		(1 994)				
Cumulative days (in thousands) × referral program		– 231**				
		(085)				
Log(duration) × referral program				– 176		
				(232)		
Constant	154***				66 250*	120 949***
	(040)				(26 742)	(26 937)
Observations	9495	28,353	9495	9495	9495	9495
R^2	025	350			040	040
Log-pseudo-likelihood			–11,715 6	–11,715 4		

*p < 05
**p < 01
***p < 001
[a]Captured by customer-specific fixed effects
Notes Robust standard errors are in parentheses

tomer is approximately 25% more valuable to the bank than a comparable nonreferred customer, within the observation period If we take into account the difference in acquisition costs of approximately 20 euros, the difference in customer value is nearly 35% These results strongly support H_3

Because the margin differential of referred customers erodes over time even though the loyalty differential does not, the question arises whether referred customers remain more valuable beyond the observation period Repeating the analysis for the six-year customer lifetime value, we show that referred customers indeed remain more valuable The average customer lifetime value of referred customers is approximately 6 euros higher than that of other customers (Mann–Whitney test, $p < 001$) After we control for differences in customer demographics and time of acquisition, the value differential is approximately 40 euros (Column 6 of Table 2, $p < 001$) Because the average customer lifetime value of a nonreferred customer is 253 euros, a referred customer is approximately 16% more valuable to the bank than a comparable nonreferred customer over a horizon of six years If we take into account the difference in acquisition costs of approximately 20 euros, the difference in customer lifetime value is approximately 25% This value differential is quite considerable

We also assess the extent to which the differences in customer value are robust across various subsets of customers Table 3 reports the regression coefficients for the referral program in models of customer value, with the same controls as in the previous analysis in Columns 5 and 6 of Table 2 Row 1 of Table 3 shows that the results for the retail customer segment are nearly identical to those for the entire sample This is not surprising, because retail customers make up approximately 90% of our overall sample More informative is that the difference in customer value also exists in the nonretail segment (Row 2 of Table 3)

Rows 3 and 4 of Table 3 show that the positive referral differential exists among high-margin customers, defined as those in the top decile based on margin, but not low-margin customers, defined as those in the bottom decile based on margin [8] The remaining rows in Table 3 show that sizable value differentials between referred and nonreferred customers exist among both men and women and among all age ranges, except for those over the age of 55 Overall, the acquisition through a referral program is associated with higher customer value for the majority of customer types, but not for all These results suggest that using referral programs might not be beneficial in all customer segments, an idea we develop further in the "Discussion" section

Robustness Checks

Table 4 shows that the hypothesis tests are robust to including retail versus nonretail segment membership as an additional control variable and allowing the effect of the referral program to vary as a function of age, sex, marital status, and retail segment membership Given the results of Table 3, we also allowed for a nonlinear effect of age [9] We mean-center all variables that interact with referral program, so its coefficient still reflects the main effect This coefficient keeps its sign and significance in each model, so the hypotheses remain supported The coefficients are larger than in Table 2, in which we did not control for segment membership and nonlinear age effects, indicating that our main analysis provides rather conservative estimates of the referral effects

TABLE 3
Results for Difference in Customer Value Within Various Segments

	Observed Customer Value (Robust Standard Errors)	Customer Lifetime Value (Robust Standard Errors)	N (N of Referred Customers)
Retail customers	48 620***	39 082***	8384
	(6 574)	(6 633)	(4473)
Nonretail customers	77 309**	69 803*	1111
	(29 855)	(30 023)	(536)
High margin customers	80 421**	69 669*	950
	(27 768)	(28 004)	(533)
Low margin customers	–1 146	–13 212***	962
	(1 581)	(2 087)	(247)
Male customers	51 679***	42 305***	4371
	(10 600)	(10 669)	(2150)
Female customers	47 437***	38 274***	5124
	(9 604)	(9 690)	(2859)
≤25 years of age	35 662**	17 701	1808
	(12 914)	(12 945)	(1242)
26–35 years of age	101 975***	85 280***	2170
	(14 908)	(14 822)	(1298)
36–45 years of age	66 148***	57 401**	1621
	(17 534)	(17 707)	(835)
46–55 years of age	62 763**	56 834**	1437
	(19 671)	(19 827)	(617)
56–65 years of age	9 433	5 122	1153
	(21 189)	(21 195)	(481)
>65 years of age	–1 577	–8 589	1306
	(21 421)	(21 409)	(536)

*$p < 05$
**$p < 01$
***$p < 001$
Notes Each row displays the coefficient of referral program in models with the same control variables as in Table 2 but estimated for specific segments

As a second robustness check, we repeated the analyses presented in Table 2 for the sample including all outliers The direction and significance of the referral effect remained the same, but the size of several effects increased The difference in daily contribution margin increased from 7 6 cents to 16 cents per day, the margin erosion increased from 23 1 cents to 45 4 cents per thousand days, the churn hazard reduction remained at 20%, and the difference in customer lifetime value increased from 40 euros to 66 euros These

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[8] Low-margin customers and high-margin customers are found in both the retail and the nonretail segments

[9] Because some readers may be interested in how the effect of referral program is moderated by covariates in the time-varying contribution model, we estimate the latter using a random coefficients specification rather than the fixed-effects specification used in Table 2

TABLE 4
Robustness Checks Allowing for Referral Effects to be Moderated

	H_{1a}	H_{1b}	H_{2a}	H_{2b}	H_3	H_3
	Daily Contribution Margin	Daily Contribution Margin (Time Varying)	Churn	Churn (Time Varying)	Observed Customer Value	Customer Lifetime Value
Referral program	133***	228***	–270**	791	88 413***	79 695***
	(017)	(062)	(084)	(1 479)	(10 870)	(10 949)
Age (mean centered)[a]	310***	529**	1 421***	1 421***	199 247***	164 893***
	(060)	(191)	(361)	(362)	(41 286)	(41 647)
Age^2 (mean centered)[a]	–004	–779	–014	–014	–2 276	–2 190
	(003)	(733)	(014)	(014)	(1 834)	(1 848)
Female (mean centered)	–008	035	017	016	–3 822	–2 828
	(013)	(041)	(076)	(076)	(9 393)	(9 487)
Married (mean centered)	050	828***	–445*	–445*	34 372	38 493
	(039)	(126)	(201)	(202)	(27 838)	(28 187)
Single (mean centered)	080*	933***	–472*	–473*	52 010	59 890*
	(040)	(128)	(211)	(211)	(27 774)	(28 119)
Divorced (mean centered)	111*	916***	–589*	–590*	77 122*	86 686**
	(044)	(139)	(231)	(231)	(31 289)	(31 696)
Widowed (mean centered)	340***	1 104***	–1 011***	–1 012***	236 446***	254 709***
	(058)	(154)	(272)	(273)	(40 821)	(41 259)
Nonretail segment (mean centered)	440***	551***	–263*	–263*	310 169***	311 262***
	(031)	(060)	(124)	(124)	(21 972)	(22 152)
Age × referral program[a,b]	151	081	–531	–532	99 676	117 447*
	(086)	(255)	(514)	(514)	(57 745)	(58 183)
Age^2 × referral program[a, b]	–015***	–311	022	022	–10 212***	–10 392***
	(004)	(1 018)	(020)	(020)	(2 539)	(2 556)
Female × referral program[b]	–005	–019	–104	–104	–2 980	–2 982
	(020)	(056)	(112)	(112)	(13 210)	(13 320)
Married × referral program[b]	–162*	–974***	953**	951**	–108 801*	–114 852*
	(068)	(174)	(362)	(362)	(45 824)	(46 049)
Single × referral program[b]	–097	–972***	743*	743*	–62 859	–70 679
	(068)	(175)	(366)	(366)	(45 988)	(46 207)
Divorced × referral program[b]	–147*	–982***	916*	917*	–103 598*	–112 706*
	(074)	(190)	(394)	(394)	(50 159)	(50 458)
Widowed × referral program[b]	–270**	–1 181***	1 246**	1 248**	–197 134**	–211 207**
	(091)	(222)	(456)	(456)	(60 695)	(61 046)
Nonretail × referral program[b]	–025	–084	014	013	–49 754	–49 193
	(046)	(084)	(188)	(188)	(30 805)	(31 001)
Year 2007 (dummy)		–1 487***				
		(143)				
Year 2008 (dummy)		–2 562***				
		(236)				
Cumulative days (in thousands)		4 004***				
		(387)				
Cumulative days (in thousands) × referral program		–220*				
		(101)				
Log(duration) × referral program				–167		
				(232)		
Constant	211***	244***			100 219***	147 265***
	(016)	(056)			(9 809)	(9 921)
Observations	9495	28,353	9495	9495	9495	9495
R^2	107	099[c]			123	122
Log-pseudo-likelihood			–11,705 8	–11,705 6		

*$p < 05$

**$p < 01$

***$p < 001$

[a] We divide age by 100 for better readability

[b] The first variable in this interaction is mean centered

[c] Because the model is a random coefficients model estimated with residual maximum likelihood, this value is a pseudo-R-square calculated as the squared correlation between predicted and actual values

Notes Robust standard errors are in parentheses All models include dummies for month of acquisition results suggest that our main analysis is rather conservative with regard to the size of the referral differentials.

Although hazard analysis properly accounts for right censoring, managers are also interested in simply knowing who is likely to have remained with the firm within a certain time frame. Therefore, we also assessed the relationship between referral and the probability of still being with the bank 21 months after acquisition. This time span is the longest duration observable without right censoring for every customer, including those who were acquired last, at the end of December 2006. Using logistic regression and controlling for demographics and month of acquisition, we find that referred customers are approximately 22% less likely to leave the firm within the first 21 months ($p < .01$).

Computing the customer lifetime value over three, rather than six, years after acquisition and repeating the analysis by controlling for demographics and time of acquisition yields a value differential between referred and nonreferred customers of 52 euros ($p < .001$) rather than 40 euros. Both the size and the statistical significance of the latter value are rather robust to reestimating the model on smaller random samples of 90% (39 euros, $p < .001$), 75% (42 euros, $p < .001$), 50% (48 euros, $p < .001$), and 25% (36 euros, $p < .01$). We also computed the expected value differential if there were no difference in retention between referred and nonreferred customers. The differential in six-year customer lifetime value decreased from 40 euros to 33 euros.

Finally, we extended the model of margin dynamics and allowed the effect of time and its interaction with referral to vary as a function of observed customer demographics, retail versus nonretail status, and normally distributed unobserved heterogeneity. This extended random coefficients model did not fit the data better. The squared correlation between observed and predicted values (pseudo-R^2) increased by only .1%, and the Bayesian information criterion even decreased. Most important, the coefficients of central interest and the statistical inference were not affected. Customers acquired through referral had a sizable initial margin advantage that eroded to zero after approximately 1000 days.

Discussion

Key Findings

Evidence of the economic value of stimulated WOM and of the customers it helps acquire has been sorely lacking. Our study addresses this gap in the context of referral programs and documents the attractiveness of customers acquired through such a program. Contribution margin, retention, and customer value all were significantly and sizably higher for referred customers. In short, referred customers are more valuable in both the short and the long run. Yet we also find that the effect is not uniform across all types of customers and that the referral program was less beneficial when used to acquire older customers or low-margin customers.

In our application, the value of referred customers in the six years after acquisition was 40 euros (or 16%) higher than that of nonreferred customers with similar demographics and time of acquisition. Considering the initial reward of 25 euros given to the referrer as an investment, this implies a return on investment of approximately 60% over a six-year span. This is a conservative estimate because it does not take into account that the total acquisition costs of referred customers are approximately 20 euros lower than those of other customers.

Implications for Practice

Several scholars have expressed cautious skepticism about the value of "viral-for-hire" and other stimulated WOM (e.g., Trusov, Bucklin, and Pauwels 2009; Van den Bulte 2010). Doubts about the benefits of stimulated WOM have long frustrated managers facing demands to increase their marketing return on investment. Our findings are important news for practitioners considering deploying customer referral programs in their own firm. Assuaging prior skepticism, we document a positive value differential, in both the short run and the long run, between customers acquired through a referral program and other customers. Importantly, this value differential is larger than the referral fee. Thus, referral programs can indeed pay off.

The positive differential indicates that abuse by opportunistic customers and other harmful side effects of referral programs are much less important than their benefits. The referral program we analyzed was especially prone to exploitation because no conditions, such as minimum stay or assets, applied to the newly acquired customer. Finding a positive value differential of referred customers in this setting is especially compelling. Moving beyond referral programs specifically, our study indicates that a stronger focus on stimulated rather than organic WOM is worth considering (Godes and Mayzlin 2009).

However, our results also suggest that firms should think carefully about what prospects to target with referral programs and how big of a referral fee to provide. For the program we analyzed, we found that the customer value differential is much larger in some segments than in others. People under the age of 55 and high-margin customers are more attractive to acquire through a referral program. It is not necessarily a coincidence that these customers also tend to be more profitable for banks (and many other consumer marketers). To the extent that the value differential stems from better matching and social enrichment, as sociological theory suggests and as employee referral programs have documented, referral programs do not "create" higher-value customers by transforming unattractive prospects into attractive customers. Rather, they help firms selectively acquire more valuable prospects and retain them longer at lower cost. Thus, instead of the currently practiced "all-in" approach, firms should design and target referral programs such that attractive customers are more likely to be enticed.

Managers must also make their customers aware of their referral programs. Bank of America, for example, communicates its referral program on all its automated teller machines throughout the United States. Connecting referral programs with online activities might help further increase their reach beyond existing customers' networks of strong ties and face-to-face interactions Managers must also make it convenient for prospects to actually become a customer A possible application is to partner with online communities and make it easy for people to start a relationship with the firm online, immediately after they receive a referral from an existing customer in the same community Our results suggest that such awareness and facilitation efforts should be targeted selectively to customers who offer the highest value differential

The referral fee is another issue that requires attention when designing a referral program Many programs offer the same reward to each referrer (Kumar, Petersen, and Leone 2010) Yet, as we show, the value of referred customers can vary widely even for one company Thus, firms may benefit from offering rewards based on the value of the referred customer However, the question then becomes how to do this without adding too much complexity to the program There may be a simple answer A standard homophily argument suggests that valuable referrers are more likely to generate valuable referrals Thus, firms may want to make the referral fee a function of the value of the referrer

A different approach to take advantage of the referral effect would be to try to generate conditions in which nonreferred customers become subject to the same mechanisms that make referred customers more valuable To the extent that the differences we have documented stem from better matching, from social enrichment, or from other mechanisms that firms can actively foster among all customers, firms may be able to dramatically "scale up" the beneficial referral effect beyond dyads of referring and referred customers For example, pharmaceutical companies increasingly involve local opinion leaders in their speaker programs and other medical education efforts They do so to capitalize on these physicians' relevance and credibility with practicing physicians

Firms in the same industry often reward referrers with the same amount For example, most German banks offer 25 euros for a referral, as does the bank we studied Our results indicate that managers set the referral fee rather low, allowing the firm to reap attractive returns from its program Offering higher rewards might lead to even more customer acquisitions while still providing positive returns on investment Firms should calculate the reward considering their specific program and the customers it attracts instead of merely following their competitors

Further Research

Our study focuses on referred and nonreferred customers of one particular bank Although its customer base and referral program have no unusual characteristics, replications would nonetheless be welcome Such studies require rich, firm-specific data on a large set of customers, with individual profitability observed over a long period Therefore, we expect replications and extensions to come from other single-firm studies such as ours and those of Godes and Mayzlin (2009), Haenlein (2010), Iyengar, Van den Bulte, and Valente (2011), and Nitzan and Libai (2010) Because the mechanisms of better matching and social enrichment are likely to be more important for complex products with important experience attributes, rather than simple products with mostly search attributes (e g , Coverdill 1998, Kornish and Li 2010, Rees 1966), studies of multiple products with varying levels of complexity would be especially informative

It is likely that the quality of the matches with the firm deteriorates as existing customers refer more new customers It would be of practical interest to know at what rate the quality of referrals decreases and at what point it tends not to justify the cost of acquisition anymore It may also be useful to know if the motivation of the referrer changes depending on the reward and whether the size of the reward affects the quality of the referred customer

Several of the implications for practice point to the benefits of better understanding the drivers of the value differential we documented Although our results are consistent with the better matching and social enrichment mechanisms we used to develop our hypotheses, our analysis focused on the consequences for contribution margin, retention, and customer value rather than on the intervening mechanisms Research aimed at more directly parsing out the mechanisms is likely to require information about actual dyads of referring and referred customers This would enable researchers to test, for example, the social enrichment argument by matching the referred customer with the respective referrer and analyzing the dependence of their retention Additional survey data may help document differences in product knowledge over time and shed light on the existence of an informational advantage eroding over time Having matched dyad-level data on both referring and referred customers would also make it possible to check whether referral dyads exhibit homophily and whether the value of referred customers varies systematically with that of their referrer (Haenlein 2010, Nitzan and Libai 2010) This would yield valuable insights for the design of individual rewards instead of the currently practiced "one-size-fits-all" approach

Conclusion

This study provides the first assessment of economically relevant differences between customers acquired through a referral program and customers acquired through other methods It documents sizable differences in contribution margin, retention, and customer value, analyzes whether these differences erode or persist over time, and investigates differences across customer segments The finding that, on average, referred customers are more valuable than other customers provides the first direct evidence of the financial attractiveness of referral programs and also offers much-needed evidence of the financial appeal of stimulated WOM in general

Improvements in the targeting, design, and implementation of such programs will require a better understanding of the drivers of the value differential The dyadic interdependence in the behavior of the referrer and the referred customer deserves special attention in further research because it is likely to prove highly relevant to both better theoretical understanding and more effective program management

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Pravin Nath & Vijay Mahajan

Marketing in the C-Suite: A Study of Chief Marketing Officer Power in Firms' Top Management Teams

Some chief marketing officers (CMOs) are more powerful than others. The authors investigate the drivers and outcomes of this phenomenon using a hierarchical measure of power for the CMO in the top management team (TMT), or corporate executive suite (C-suite). Theory suggests that CMO power in the TMT should increase with (1) the CMO's control over resources required by other executives in the C-suite, (2) the criticality and (3) effective provision of these resources, and (4) the nonsubstitutability and (5) centrality of the CMO. The authors use these rationales to identify factors that affect CMO power in public U.S. firms with the CMO position for at least two of the five observed years. The findings show that CMO power increases when the CMO has the additional responsibility of sales, as TMT marketing experience decreases, and as firms with low levels of TMT marketing experience pursue innovation. Furthermore, CMO power in highly divisionalized TMTs and the CMO's additional responsibility of sales improve sales growth, but CMO power in firms that are unrelated diversifiers reduces profitability. The authors discuss the theoretical and practical implications of these results for marketing's influence in the C-suite and the firm, the integration of marketing and sales, and market orientation.

Keywords: chief marketing officer, top management team, hierarchy, influence, decision, control, resource, sales, integration

This research attempts to add to the body of knowledge on the role of marketing in the firm by exploring marketing's influence at the level at which the firm's corporate strategy is formulated (Anderson 1982, Day 1992, Varadarajan and Clark 1994, Webster 1992, Wind and Robertson 1983). Researchers have identified chief marketing officer (CMO) presence in the firm's top management team (TMT), or corporate executive suite (C-suite), as an indicator of the status of marketing at this level (Kerin 2005, Nath and Mahajan 2008, Webster, Malter, and Ganesan 2003).[1] However, in addition to CMO presence, it is important to investigate the CMO's power in the TMT because power is central in strategic decision making according to the political view of organizations (Cyert and March 1963, Mintzberg 1983, Pettigrew 1973). According to this view, conflict is inherent in the TMT, and the use of power is often "the mechanism by which conflict gets resolved" (Pfeffer 1981, p. 70). Thus, powerful CMOs are more likely to have a greater influence on decisions that executives in the TMT make. It follows that CMO power in the TMT is also an indicator of marketing's influence in the C-suite.

In this research, for reasons detailed in subsequent sections, we focus on the CMO's structural power, measured by the position the CMO occupies in the hierarchy of the TMT. We find that not all CMOs occupy the same level in the TMT hierarchy. Thus, some CMOs have more (or less) power in the TMT than other CMOs. To our knowledge, no prior research to date has studied the influence of marketing in the C-suite by focusing on CMO power. The one exception that we are aware of is Piercy's (1989b) cross-sectional study, which examines the control of sales forecasting as a predictor of perceptual measures of CMO power. Our research attempts to fill this gap in the field. Specifically, we address the following research questions: (1) What are the sources of CMO power in firms' TMTs? and (2) What are the firm performance outcomes related to CMO power? We show the conceptual framework we use to address these questions in Figure 1 and elaborated on it in the following section.

Both academics and practitioners have called for the CMO's role to evolve into one that is more strategic in the upper echelons of the firm (Court 2007, Crosby and Johnson 2005, Kerin 2005, McGovern and Quelch 2004, Silver 2003). However, theoretically based empirical work that informs the means to achieve such a role is scant. By iden-

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[1] The TMT or C-suite, which we use interchangeably, is the set of executives officers as specified in firms' 10-Ks and/or annual reports. Chief marketing officer presence or absence is based on whether or not the TMT has an executive with the word "marketing" as part of his or her title; titles include, but are not limited to, CMO and Vice President of Marketing (Nath and Mahajan 2008).

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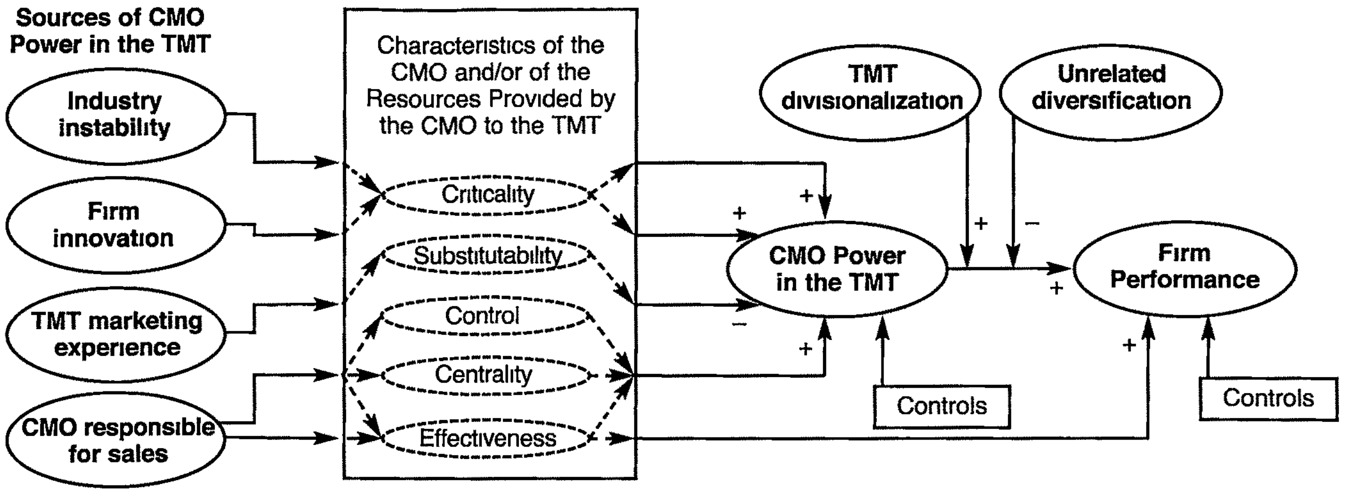
ISSN: 0022-2429 (print), 1547-7185 (electronic)

FIGURE 1
A Model of the Sources of CMO Power and Its Related Outcomes



Notes Dashed lines represent rationales based on constructs not measured in this study

tifying the factors that affect CMO power, this research attempts to identify the means for and constraints on this evolution of the CMO's role at the strategy table Furthermore, Nath and Mahajan (2008) find that CMO presence does not positively or negatively affect firm performance By exploring the consequences of CMO power, we explore whether this is because not all CMOs are equally empowered to affect performance [2] Finally, by exploring the power of marketing in the C-suite, we hope to contribute to the emerging body of work on marketing influence in the firm (Homburg, Workman, and Krohmer 1999, Moorman and Rust 1999, Verhoef and Leeflang 2009, Webster, Malter, and Ganesan 2003)

In the next section, we first define CMO power and set up our conceptual model by identifying sources of intraorganizational power (rationales in Figure 1), we then hypothesize effects for the sources of CMO power and outcomes related to CMO power Next, we describe the study's methodology, including our sample, measures, and analyses Finally, we present our results, their implications for theory and practice, and suggestions for further research

Theory and Hypotheses

CMO Power in the TMT

Given the multiple perspectives on power that have emerged from prior research (e g , Bacharach and Lawler 1980), we first clarify what we mean by CMO power in the TMT We draw on prior conceptualizations of power (e g , Gaski 1984) and define CMO power in the TMT as the CMO's ability or capacity to influence the TMT The TMT formulates the firm's corporate strategy through a series of strategic decisions that cover the firm's goals, product-market entry and exit, and resource allocations (Cyert and March 1963, Hambrick and Mason 1984, Varadarajan and Clark 1994) All executives in the TMT are involved in and have some influence over this decision-making process Therefore, we are concerned with the CMO's power over the broad range of strategic decisions that the TMT makes Consequently, we adopt a macro or structural perspective of power by focusing on *potential* influence and preclude a micro or behavioral perspective that would focus on *manifest* influence (Brass and Burkhardt 1993, Frazier and Rody 1991, Gaski 1984, Merlo, Whitwell, and Lukas 2004, Provan 1980)

Potential influence, or power as we define it, is the maximum possible social influence that can be applied, while manifest influence is the actual influence that is applied (French and Raven 1959) The latter is specific to a decision and depends on the influence strategies used and the actors who use and are subjected to them (Dawes, Lee, and Dowling 1998, Kohli 1989, Venkatesh, Kohli, and Zaltman 1995) Unlike manifest influence, potential influence is not decision specific and therefore is applicable over the range of decisions in the TMT's strategic decision-making process Furthermore, actual influence can only be applied and influence strategies can only be used if an actor has the power to do so in the first place (Dwyer and Walker 1981) Finally, power is considered primarily a structural phenomenon, in which the position, not the person, determines influence (Pfeffer 1981, Ronchetto, Hutt, and Reingen 1989) Because we adopt a structural view of power, the findings from this research have relevance to the CMO position, regardless of person, decision, or influence strategy Although this approach may be appropriate given the lack of prior research on CMO power, we note here that a behavioral perspective is also an important one, and we address it subsequently as an avenue for further research

Sources of Power in Organizations

To identify sources of CMO power, we draw on the strategic contingencies theory of intraorganizational power

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[2] We thank the anonymous reviewers for pointing us in this direction

(Hickson et al 1971) and resource dependence theory (Pfeffer 1981, Pfeffer and Salancik 1978) According to these theories, organizational tasks, and therefore resources, are divided or allocated among actors in the firm because these actors are boundedly rational in the face of organizational complexity (Child 1972, Hickson et al 1971, Pfeffer 1981, Thompson 1967) Resources include money, tangible and intangible assets, information, knowledge, processes, competencies, and capabilities, the last of which has also been referred to as the ability to deploy resources effectively (Barney 1991, Day 1994, Hunt and Morgan 1995, Pfeffer 1981, Vargo and Lusch 2000, Wernerfelt 1984) According to Hickson and colleagues (1971) and Pfeffer (1981), the dependence of actors on a focal actor increases with the focal actor's control over resources that are critical to the functioning of the other actors or to their goals This dependence gives the focal actor power over the other actors (Blau 1964, Dahl 1957, Emerson 1962, Thibaut and Kelley 1959) We use these statements to infer that a focal actor's power in a group increases with (1) the amount of control the focal actor has over these resources required by other actors in that group, (2) the criticality of these resources, and (3) the effectiveness with which these resources are provided to them

The first two inferences follow from reasonable observations that both control and criticality of resources exist on a continuum and that control is most likely shared with other actors (El-Ansary and Stern [1972] treat control and criticality in a similar manner, except that they refer to criticality as importance) The third is indirectly referred to in the aforementioned theories as concepts of effective coping or skill—if the focal actor does a poor or less skillful job of providing resources to the other actors who require them, the other actors will rely less on the focal actor The theories also propose that power of a focal actor increases with (4) the nonsubstitutability (or decreases with substitutability) and (5) centrality of the focal actor or his or her resources The former is based on the logic that the difficulty of finding other actors with similar resources increases dependence on the focal actor (Dubin 1963) The latter views organizations as networks of multiple exchanges between actors (Tichy, Tushman, and Fombrun 1979) The greater the interconnectedness of a focal actor or of the focal actor's activities to other actors and their activities in a network, the greater are the focal actor's opportunities to exchange resources Thus, all else being equal, a central actor commands greater dependence from other actors in a network, which gives this actor greater power

Sources of CMO Power in the TMT

The preceding subsection provides the theoretical bases for identifying factors associated with the power of a focal actor in an organizational setting The focal actor in this research is the CMO, and our interest is in the power of the CMO relative to that of all the other executives in the TMT Top management teams that face complexity in the marketing domain are more likely to create a CMO position (Nath and Mahajan 2008) As a result of this structural decision, marketing tasks get allocated to the CMO, as reflected in the roles and responsibilities of the executive in this position Prior research has indicated that these cover a wide range of activities, giving the CMO control over many resources (CMO Council 2007, CMO Survey 2008, Hopkins and Bailey 1984, Hyde, Landry, and Tipping 2004, Nath and Mahajan 2008, Piercy 1986) We attempt to categorize these into Hunt and Morgan's (1995) seven types of resources—financial, physical, legal, informational, human, relational, and organizational Of these, there is little evidence of the CMO controlling financial, physical, and legal resources, leaving the CMO in control of resources that are primarily informational, human, relational, and organizational (Griffith and Lusch [2007] use a similar categorization for the resources of marketing personnel)

Informational resources include qualitative and quantitative data as well as insights about customers, including trends, human resources include the skills and knowledge of employees of the marketing organization, including the CMO, relational resources include relationships with channel members, end users, and marketing services agencies, such as market research and advertising, and organizational resources include marketing capabilities, such as market sensing and customer linking (Day 1994), which effectively bring together the other resources In line with the theories of power discussed previously, we conceptualize CMO power in the TMT as a function of TMT dependence on the CMO, which in turn increases with (1) the amount of control the CMO has over the resources identified here,[3] (2) the criticality of these resources to the TMT, (3) the effectiveness with which the CMO provides these resources to the TMT, and (4) the nonsubstitutability and (5) centrality of the CMO or the CMO's resources in the TMT As the model in Figure 1 shows, we identify sources of CMO power and develop hypotheses for their effects using these five rationales (for ease of representation, the ordering of rationales is slightly different in the model shown in Figure 1, and substitutability replaces nonsubstitutability)

TMT uncertainty stemming from industry instability Uncertainty in industry demand is a function of the volatility or instability of growth in an industry (Achrol and Stern 1988, Duncan 1972, Hambrick and Cannella 2004) Top management teams rely on trends of growth in their industries to formulate long-term strategic plans that include, but are not limited to, capital investments, staffing decisions, and exiting or entering a particular product-market segment (Finkelstein and Hambrick 1996) The more these trends fluctuate, the greater is the uncertainty faced in making decisions, and the more critical it becomes to scan and interpret the environment (Daft and Weick 1984) Although macroeconomic forces might contribute to such instability in demand, the underlying reason is arguably shifts in preferences of customers who make up this environment (Grewal and Tanushaj 2001) Compared with other executives in the TMT, CMOs are best positioned to reduce TMT uncertainty stemming from the unpredictability of customer preferences, given the customer-related human, informational, relational, and organizational resources they control Homburg, Workman, and Krohmer (1999, p 4) make a similar argument with respect to marketing department influence in firms' business units "When market-related uncertainty is high, marketing makes a more important strategic contribution to the firm because there is greater need to gather and process market-related information" Thus, the CMO's resources become critical in the face of TMT uncertainty from industry instability, which, in accordance with the rationale of criticality identified in the preceding discussion, leads us to hypothesize the following

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[3] Again, we are concerned with CMO power in the TMT, which is the CMO's ability to influence the TMT's strategic decision-making process Thus, power, similar to influence, is over decisions (see Homburg, Workman, and Krohmer 1999), while control is over resources, two conceptually distinct domains

> H_1 The degree of industry instability a firm faces is positively related to the power of the CMO in the TMT

TMT uncertainty stemming from firm innovation As does industry instability, we argue that firm innovation also increases TMT uncertainty because investing in new products and services has the inherent quality of unpredictability (Barker and Mueller 2002, Henderson and Fredrickson 1996) Firms that invest in research and development (R&D) are not guaranteed success, but the TMT must make choices and allocate resources based on future expectations (Eisenhardt and Bourgeois 1988, Yadav, Prabhu, and Chandy 2007) Success is driven in large part by correctly anticipating customer needs and wants (Gupta, Raj, and Wilemon 1986) Therefore, the resulting TMT uncertainty is effectively addressed with the CMO's resources, such as insights into potential segments and customer-linking capabilities, making CMOs critical Homburg, Workman, and Krohmer (1999) and Moorman and Rust (1999) make similar arguments regarding marketing's role and its possible influence The more aggressive the pursuit of innovation in terms of a firm's R&D investments, the greater is this uncertainty and, therefore, criticality, leading us to hypothesize the following

> H_2 A firm's level of innovation is positively related to the power of the CMO in the TMT

TMT marketing experience According to "upper echelons theory," top executives with similar functional experience scan, interpret, and act on information in the same manner (Finkelstein and Hambrick 1996, Hambrick and Mason 1984) Thus, to a TMT executive with marketing experience, the CMO may not possess substantially unique informational (e g , insights), human (e g , skills), and organizational (e g , market-sensing capability) resources In other words, the CMO and/or the CMO's resources would be relatively substitutable In accordance with the fourth rationale of nonsubstitutability, a greater proportion of such executives in the TMT would imply less TMT dependence on the CMO In addition, the increased availability of such marketing experience in the TMT also makes the CMO substitutable for TMT executives without this experience, further reducing TMT dependence on the CMO (Emerson 1962) This leads us to hypothesize the following

> H_3 The proportion of a firm's TMT with marketing experience (excluding the CMO) is negatively related to the power of the CMO in the TMT

Additional responsibility of sales for the CMO Not all CMOs are also responsible for sales Given Montgomery and Webster's (1997, p 13) observation that "there have been cycles of separating and then combining" marketing and sales, a discussion of the reasons for this is not within the scope of our research (for a detailed analysis of this issue, see Workman, Homburg, and Gruner 1998) We use three of the five rationales for TMT dependence on the CMO, arguing that the CMO's power increases with this additional responsibility of sales First, the additional responsibility of sales increases the CMO's control over resources we identified previously The sales function is an informal source of information about consumers because sales personnel have knowledge, skills, and relationships that are specific to the market segments they cover (Carpenter 1992, Cespedes 1996) Thus, a large overlap occurs in the resources that marketing and sales control (Guenzi and Troilo 2007) This is evidenced in Verhoef and Leeflang's (2009) finding that marketing's loss of control over activities such as pricing and distribution is explained by the sales executives' increasing control over them It follows then that a CMO who has the additional responsibility of sales has more control over the resources the TMT requires Some evidence of this resulting in greater CMO power is reflected in Piercy's (1989b) finding that the control of sales forecasting increases marketing power

Second, the additional responsibility of sales makes the CMO more effective in the provision of these resources, which, as our third rationale suggests, should increase CMO power Researchers and practitioners have argued that the integration of marketing and sales is important for superior performance (Carpenter 1992, Court 2007, Dewsnap and Jobber 2000, Donath 2004b, Rosenbloom and Anderson 1984, Rouzies et al 2005) There is also some empirical evidence that cooperation between these functions can achieve this (Guenzi and Troilo 2007) Homburg and Jensen (2007) refine this view by finding that though most differences between the thought worlds of marketing and sales (related to skills and knowledge) reduce cooperation, some (related to orientations) may improve performance As integration mechanisms for achieving this, they recommend that firms install "an internal role structure that foster's devil's advocacy" (Homburg and Jensen 2007, p 135) and "strong structural linkages" (Homburg, Jensen, and Krohmer 2008, p 149) If a CMO with the additional responsibility of sales is one such integration mechanism, such a CMO should be more effective in providing the resources he or she controls to the TMT Indeed, the same researchers and practitioners who call for such integration also suggest that having a common leader is one way to achieve it (Cespedes 1996, Donath 2004a, Rouzies et al 2005)

Third, we argue that the CMO and the activities he or she performs become more central in the TMT when the CMO is also in charge of sales, given the greater opportunity of interactions between the CMO and other TMT executives As evidence, we again cite Piercy (1989b), who shows that the control of sales forecasting affects the power of the marketing department through the connectedness or centrality of the department On the basis of these three arguments, we hypothesize the following

H_4 CMOs who are also responsible for sales have relatively more power in the TMT than CMOs who do not have this responsibility

Outcomes Related to CMO Power and to Sources of CMO Power in the TMT

Our second research question pertains to firm performance outcomes related to CMO power We first explore the main effects of CMO power, and then we consider one of the sources of CMO power—namely, the CMO's additional responsibility of sales Following this, we explore possible moderators of the CMO power–firm performance link (see Figure 1)

CMO power and firm performance We note that there is little theoretical precedence for arguing that a particular TMT executive's power should be related to firm performance, the only exceptions pertain to the power of the chief executive officer (CEO), but even in these cases, the focus is on the issue of equal/unequal power distribution in the TMT (see Smith et al 2006) This is not surprising, because TMTs often use power as a political tool, without regard necessarily for the firm's interests (Pfeffer 1981) To be able to argue for directional effects of CMO power on firm performance, we first draw on research related to marketing department influence Moorman and Rust (1999) argue that marketing influence results in specialized marketing knowledge and, in turn, should improve performance They also find empirical support for this line of reasoning Verhoef and Leeflang (2009) use a similar argument, and though they do not find such a significant relationship in a Netherlands-based sample, they do in samples drawn from other countries in a subsequent study (Verhoef et al 2009) In line with these findings, TMTs in which CMOs have relatively greater power should also benefit from specialized marketing knowledge, which in turn should positively affect firm performance

We also draw on two particular roles of the CMO that Hyde, Landry, and Tipping (2004, p 7) observe aligning "division marketing plans with corporate strategies" and aligning "marketing in the business units, and their personnel, with the central agenda" The issue of alignment of executive decisions with the corporate agenda has been extensively examined in the context of compensation structures of executives in the C-suite (see Aggarwal and Samwick 2003) To the extent that such an alignment is beneficial for the firm (Carpenter and Sanders 2002), CMOs who successfully perform these two roles contribute to firm performance This success is arguably more probable as CMO power increases because each of these roles is bound to be fraught with conflict as the CMO engages in decision making with executives in charge of these divisions Therefore, on the basis of this discussion, we hypothesize the following

H_5 The power of the CMO in the TMT is positively related to firm performance

Additional responsibility of sales for the CMO and firm performance Our discussion of the sources of CMO power also suggests one more effect related to CMO power, albeit from a source of CMO power itself—namely, the CMO's additional responsibility of sales One of the rationales we use for hypothesizing a positive effect of this responsibility on CMO power is that of increased effectiveness in the CMO's provision of resources to the TMT Our argument for this rationale relies on the assumption that CMOs with this dual responsibility are able to successfully integrate marketing and sales, improving cooperation while managing the tensions of their respective long- and short-term worldviews Homburg and Jensen (2007) show that such integration, albeit at the level of the strategic business unit (SBU) improves SBU performance Consequently, we also expect the CMO's additional responsibility of sales to improve TMT, and therefore firm performance Because none of the other sources of CMO power rely on this rationale of effectiveness, it is not possible theoretically to make a case for performance-related directional effects with any of them On the basis of this discussion, we hypothesize the following

H_6 The CMO's additional responsibility of sales is positively related to firm performance

Moderators of CMO power-related firm performance effects As we discussed previously, a reason to expect that CMO power positively affects firm performance is that powerful CMOs are able to align divisional marketing plans with corporate strategies Consequently, CMO power should matter more in firms in which there are more divisions, as represented by the proportion of divisional heads in the TMT Therefore, we expect the performance gains from high CMO power to be strengthened in such firms Conversely, in firms that are less divisionalized or purely functional, the issue of alignment itself is less important to firm performance because there are too few or no powerful divisional heads with individual agendas separate from that of the TMT (Chandler 1991, Weitz and Anderson 1981) In such firms, CMO power should matter less to performance insofar as it is important for alignment

We extend this logic to also argue that the CMO power–firm performance relationship is weakened in firms that pursue unrelated diversification The premise of unrelated diversification is the separation of agendas of the firm into unrelated domains (Varadarajan 1992) It is likely that in such firms, empowered CMOs work against this basic premise in trying to align these firms' various unrelated businesses and their plans Consequently, the performance gains from high CMO power should be weakened in such firms This discussion leads us to hypothesize the following moderation effects

H_7 The positive relationship between CMO power in the TMT and firm performance is strengthened (weakened) in firms with high (low) levels of TMT divisionalization (i e , firms with high [low] proportions of divisional heads in the TMT)

H_8 The positive relationship between CMO power in the TMT and firm performance is weakened in firms that pursue unrelated diversification

Method

Sample

We studied firms over a considerable duration so that idiosyncrasies of a particular year would not affect our inferences and to allow for stronger claims of causality The most recent year with secondary data available on TMTs of firms was 2005, when we initiated this research Consequently, we chose to observe firms over the five-year period, from 2001 to 2005 We identified all firms in the COMPUSTAT database with sales of at least $250 million in 2002 because CMOs were more likely to be present in relatively larger firms (Hyde, Landry, and Tipping 2004) To test the hypothesis on innovation, we dropped firms in industries that did not report R&D expenditures (e g , retailing) As a result of these filters and firm attrition, we were left with 167 firms (811 firm years), 91 (334 firm years) of which employed a CMO for at least one year

From this sample, we dropped 13 firm years because firm outcome variables were not available for time t + 1 (the firms had been either acquired or privatized) We also dropped 14 outlier observations because return on sales (ROS), an outcome and control variable, and firm innovation, an independent and control variable, were well outside the range of three standard deviations for these observations Finally, because we wanted to use the longitudinal nature of our data to analyze CMO power, we dropped firms that had a CMO for only one year This is because accounting for serial correlation requires at least two observations for each firm, an issue we discuss in greater detail in the "Analyses" section It also ensures that our results related to CMO power are limited to firms that are somewhat "CMO prone" in the first place Our sample originally had only 10 firms with a CMO observed for exactly one year, however, the removal of firm years as a result of attrition and outliers we just described increased this number to 14 Thus, our final sample had 165 firms (772 firm years), with the analyses related to CMO power being carried out on 77 firms (299 firm years) with the CMO position for at least two years[4]

Data Sources and Measures

CMO power in the TMT In our theoretical discussion, we defined CMO power as the potential influence of the CMO over a range of decisions the TMT makes, rather than manifest influence, which would be specific to each decision Prior studies have used primary and/or secondary measures to capture executive or employee power in this sense Primary measures use survey-based scales to capture perceived power or influence over a range of decisions (e g , Anderson and Narus 1990, Hinings et al 1974) However, these measures have an inherent limitation of not being longitudinal, along with other issues, such as bias (Hambrick 1981) Secondary measures of power that overcome these limitations typically capture the hierarchical level of the executive or employee Hierarchical level or formal authority is considered the "crystallization of earlier power patterns" (Hambrick 1981, p 267) and "the most easily recognizable, legitimate structural position" (Brass and Burkhardt 1993, p 462)

Prior research has found that hierarchical measures of power are strongly correlated with, or explain, perceptual measures of power or influence over a broad domain of decisions (Finkelstein 1992, Fombrun 1983, Hambrick 1981, Piercy 1986, Ronchetto, Hutt, and Reingen 1989) Among these studies, Finkelstein's (1992) is the only one that offers a measure that accounts for differences between the hierarchies, or the number of levels, of TMTs Therefore, we adapt Finkelstein's measure of structural power, called "percentage with higher titles" (p 512), which constitutes "the legislative right to exert influence" (p 509), to capture CMO power[5]

Our measure of CMO power subtracts from 1 the proportion of levels in the TMT above the CMO's level The subtraction from 1 is the only difference with Finkelstein's (1992) measure, it ensures that increasing values represent greater influence The TMT is the set of executive officers specified in the firms' 10-Ks and/or annual reports, and TMT levels were fairly straightforward to determine from the titles of these executives (e g , senior vice presidents were at a higher level than vice presidents) We assume that the CEO is at the highest level in the TMT and has the most power For the CEO, this measure takes a value of 1 because there are 0 levels above the CEO, for all other executives, it varies between 0 and 1 Chief marketing officers higher in the TMT hierarchy have relatively greater values on this measure For the purpose of illustration, consider two CMOs, denoted as A and B Let CMO$_A$ be at Level 2 in a TMT with four levels Thus, there is one level above CMO$_A$, and the proportion of levels in the TMT above CMO$_A$ is 1/4 (25) because there are four levels Therefore, the measure of power for CMO$_A$ is $1 - 25 = 75$ Let CMO$_B$ be at Level 3 in a TMT with four levels Therefore, CMO$_B$ should have less power than CMO$_A$, who is at Level 2, or one level higher than CMO$_B$, in a TMT with the same number of levels Because there are two levels above

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[4] The breakup of the sample of firms with a CMO (firm years in parentheses) by industry or two-digit Standard Industrial Classification (SIC) is as follows 23 (85) in Business Services, or SIC 73, 19 (73) in Industrial Machinery and Equipment, or SIC 35, 12 (50) in Electrical and Electronic Equipment, or SIC 36, 10 (37) in Instruments and Related Products, or SIC 38, 4 (19) in Chemicals and Allied Products, or SIC 28, 3 (12) in Rubber and Miscellaneous Plastic Products, or SIC 30, 3 (8) in Fabricated Metal Products, or SIC 34, and 1 (5) each in Furniture and Fixtures, Paper and Allied Products, and Primary Metal Industries (SICs 25, 26, and 33, respectively) We also note that performing analyses on only the firm years with a CMO presents a type of sample selection problem, we address this issue in the "Analyses" subsection

[5] Other measurements or proxies of power or potential influence include, but are not limited to, the ability to reward/punish, compensation, company stock owned, and board membership (see Finkelstein 1992, Kohli 1989) These were either not relevant or unavailable for our research For example, rewarding or punishing is unlikely in the context of the CMO's interactions with other TMT executives, and data on compensation and stock owned were only available either for TMT executives who were also board members (none of the CMOs in our sample were on the board of their firms) or for a few key TMT executives, with the CMO rarely being among them

CMO_B, the proportion of levels in the TMT above CMO_B is 2/4 (5), and the measure of power for CMO_B is $1 - 5 = 5$, which is less than 75, the value for CMO_A

In addition, the measure accounts for the differences in the total number of levels between TMTs If the total number of levels in two TMTs with CMOs at the same level is different, the CMO in the TMT with more levels is accorded greater power in the TMT To illustrate, consider a third CMO, C Let CMO_C also be at Level 3, but in a TMT with five levels, unlike CMO_B's TMT, which has four levels The proportion of levels in the TMT above CMO_C is 2/5 (4), and the measure of power for CMO_C is $1 - 4 = 6$, which is more than that of CMO_B (but less than that of CMO_A) Thus, the measure considers not only the CMO's proximity to the CEO but the total number of levels in the TMT as well, with the latter being linked to the number of levels below the CMO's level in the TMT In summary, being closer to the CEO and having more TMT levels below implies greater power for a focal executive

Finally, because our measure is a secondary measure of power, it must also accommodate the difference in sizes of TMTs, or the total power of the TMT This is related to the idea of power being a zero-sum game (Bacharach and Lawler 1980) Therefore, following Finkelstein (1992), we divide the power of the CMO (as we just discussed) by the total power of the TMT, which is the same power measure summed over all the executives in the TMT

Sources of CMO power in the TMT Industry instability at time t – 1 was the standard deviation across five lagged years of the median sales growth of the firm's industry at the two-digit Standard Industrial Classification (SIC) level, based on similar measures used by Hambrick and Cannella (2004) We also used various alternative measures based on prior research, such as residuals of regressions of total industry sales on time, but these were typically highly correlated with this previous measure and did not change any of our results For diversified firms with sales in more than one industry, we computed a weighted average of these measures, using the proportion of sales in each industry as weights We measured firm innovation using the ratio of R&D to sales at time t – 1 In analyses that did not specifically include industry-level dummies, we subtracted the median innovation of the firm's primary industry from firm innovation to control for industry effects We measured the proportion of the TMT with marketing experience as the ratio of the executives in the TMT at t – 1, with marketing or marketing-related experience that included, for example, sales, advertising, and customer service In computing this ratio, we excluded the CMO at time t if he or she was present in the TMT at time t – 1 We captured the additional responsibility of sales of the CMO at time t with a dummy variable, which took the value of 1 if the word "sales" was also present in the CMO's title (e g , Vice President, Marketing and Sales) and 0 if otherwise We used Standard & Poor's COMPSUTAT data for industry- and firm-level variables and 10-Ks and/or annual reports for TMT- and CMO-level variables Bloomberg, Dun & Bradstreet's Register of Corporations, and company Web sites provided additional information on backgrounds

Firm performance We used sales growth and ROS as measures of firm performance, subtracting the industry median in models without industry-level dummies Both sales growth and ROS have been used extensively in prior research on marketing outcomes and have been empirically linked to marketing capabilities (Krasnikov and Jayachandran 2008) Therefore, they are particularly relevant to the investigation of outcomes of CMO power We averaged both measures over time t and t + 1 because decisions made during a certain period can have performance implications for that period as well for future periods We did not consider t + 2 and beyond, because many firms did not have a CMO position for more than two years and we did not want to confound position outcomes with person outcomes given short CMO tenures

Controls We controlled for time effects by including four dummy variables for the five years of observation, with 2001 as the base year We also included controls at the industry, firm, and TMT levels Industry-level controls were sales growth and market concentration, weighted by the proportion of sales in the industry for diversified firms, as we described previously for industry instability Previous research on the role of marketing has included some form of these variables with mixed results (e g , Homburg, Workman, and Krohmer 1999) Industry sales growth was the average over five lagged years of the median sales growth of the firm's industry at the two-digit SIC level Market concentration was the Herfindahl–Hirschmann index, which is the sum of the square of market shares of all these firms at t – 1 As an alternative to these controls, we also used dummy variables at the two-digit SIC level, here, we did not test for industry instability These variables, along with industry instability, have also been linked to firm performance (e g , Hambrick and Cannella 2004) Therefore, we also used them as control variables to account for industry effects when firm performance was the dependent variable

Firm-level controls included size using the log of the firm's employees at time t – 1 Larger firms tend to have larger resources, therefore, executives in such firms may have greater power than their counterparts in firms with smaller resources For similar reasons, we also controlled for firm diversification by including a dummy variable equal to 1 or 0 if a firm was diversified or undiversified, respectively, at time t – 1 We used three alternatives for determining whether a firm was diversified—total, unrelated, or related diversification—using entropy measures of each based on segment sales available in COMPUSTAT (Palepu 1985) For each alternative, a firm was diversified if this measure was greater than 0 Next, we controlled for whether a firm was selling to consumers (business to consumer [B2C]), businesses (business to business [B2B]), or a mix of these two types (mixed), given mixed results with this variable in prior research on marketing influence (Homburg, Workman, and Krohmer 1999, Verhoef and Leeflang 2009) Following Rao, Agarwal, and Dahlhoff (2004), we used the description of the firm's customers in the 10-K to determine this and assumed that it was constant over the observation period We combined B2C and mixed firms into one category because there were few pure B2C firms Because these firm-level variables affect firm performance (see Nath and Mahajan 2008, Rao et al 2004), we also used them as controls in the analyses with firm performance outcomes (except diversification, which is a hypothesized moderator variable in these analyses) Finally, in the model of the sources of CMO power, we also included sales growth and ROS, both measured at time t – 1, to control for the likelihood that CMO power is in any way related to prior performance

The TMT level controls were TMT size, TMT levels, TMT divisionalization, chief operating officer (COO) presence, and CEO tenure, all at time t We expected larger TMTs to reduce the relative power of executives because more executives are involved in the strategic decision-making process We have already described TMT levels, and TMT size is the number of executives specified as the executive officers in the firm's 10-K and/or annual report, less the CMO Similarly, having relatively more divisional heads controlling greater resources possibly reduces the relative power of other TMT executives Top management team divisionalization is the proportion of the TMT heading a division or business unit (Aggarwal and Samwick 2003) For COO presence, we included a dummy that equaled 1 (0) when a COO was present (absent) We expected this variable to have a negative effect on CMO power because COOs were always coded at Level 2, one below the CEO, with all other executives being below the COO We did this because the COO position is widely recognized as being the second in command (Hambrick and Cannella 2004) Finally, we controlled for the log of CEO tenure because longer-tenured CEOs may be more powerful, thus reducing the power of TMT executives, including the CMO (Hambrick and Fukutomi 1991) Because these variables have been linked to firm performance (see Hambrick and Cannella 2004), we also used them as controls when it was the dependent variable (except for TMT divisionalization, which we hypothesized to be a moderator variable in these analyses)

For firm performance, in addition to the controls already mentioned, we controlled for whether the firm made any acquisitions at time t by including a dummy equal to 1 (0) if it did (not), as reported in Thompson Reuters's SDC Platinum financial reports Furthermore, we controlled for firm differentiation, which we measured as the ratio of advertising to sales at time t – 1, and firm innovation, for which we subtracted the industry median in models without industry-level dummies Finally, we included TMT marketing experience and a dummy variable equal to 1 when CEOs were outsiders (i e , when the CEO had been appointed within two years of joining the firm) and 0 otherwise Again, these variables are relevant to performance (Nath and Mahajan 2008, Rao, Agarwal, and Dahlhoff 2004, Weinzimmer et al 2003)

Analyses

Controlling for selection bias We conduct our analyses on sources and outcomes of CMO power only on firm years with a CMO In doing so, we encounter a classic case of the sample selection problem because we exclude firm years without a CMO, failing to control for this results in biased estimates (Heckman 1979) We employ a commonly used technique to address this problem—namely, that of including a correction factor computed from a first-stage probit estimation, with CMO presence as the dependent variable—in our second-stage analyses related to CMO power In this first-stage analysis, we code CMO presence as 1 if the firm had a CMO in that year and 0 if otherwise To the extent possible, we ensure that the independent variables in this analysis include all the variables in our second-stage analyses and at least one variable not in these analyses, as Wooldrige (2003) recommends The correction factor, also known as the inverse Mills ratio, is then the ratio of the probability density function to the cumulative density function for CMO presence We include this correction factor (denoted as λ) in our second-stage estimations related to the sources and outcomes of CMO power Given space constraints, we do not provide details here, but we note that our results on branding strategy, innovation, and differentiation, as drivers of CMO presence, are similar to those of Nath and Mahajan (2008) [6]

Model estimation We conducted all analyses using generalized estimating equations (GEE) developed by Liang and Zeger (1986), with StataCorp (2005) The GEE technique can be applied to various distributions with different canonical links, it corrects for serial correlation in longitudinal data by using a working correlation structure that is specified a priori (Zorn 2001) Although the Gaussian distribution most closely approximates our measure of CMO power, it is bounded between 0 and 1 Following Rentz and Reynolds (1991), we address this by computing $\ln[P/(1 - P)]$ for P, the measure of CMO power we described previously, when it is the dependent variable Because our sample had firms with the CMO position for only two years, we specified a first-order autoregressive, or AR(1), correlation structure to account for serial correlation Although GEE analyses are fairly robust to alternative specifications of the correlation structure, we used robust standard errors (Liang and Zeger 1986) Therefore, our specification for the GEE was a Gaussian family, an identity link, and an AR(1) correlation structure, which we used to estimate the following models

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[6] We thank an anonymous reviewer for suggesting this analysis, details of which are available on request Here, we note that our analysis differs from Nath and Mahajan (2008) in that we used the lagged dependent variable as an independent variable, while they did not Lagged dependent variables are recommended for variables, such as CMO presence, that demonstrate high inertia (Wooldridge 2003) They also improve the explanatory power of the first-stage model, thus reducing multicollinearity between the correction factor and the independent variables in the second-stage model It is possible that this difference caused outsider CEO to significantly predict CMO presence in their models but not in ours

$$
\begin{aligned}
(1)\quad \text{LCPower}_{it} = {} & \alpha_0 + \alpha_1\text{IndInstab}_{i(t-1)} + \alpha_2\text{FirmInnov}_{i(t-1)} \\
& + \alpha_3\text{MktExpTMT}_{i(t-1)} + \alpha_4\text{CM\&S}_{it} \\
& + \sum_{j=1}^{4}\alpha_{j+4}\text{Time}_{jt} + \sum_{k=1}^{2}\alpha_{k+8}\text{IndControls}_{ki(t-1)} \\
& + \alpha_{11}\text{TimeConstFirmControl}_i \\
& + \sum_{m=1}^{4}\alpha_{m+11}\text{TimeVaryFirmControls}_{mi(t-1)} \\
& + \sum_{n=1}^{6}\alpha_{n+15}\text{TMTControls}_{nit} + \alpha_{22}\lambda_{it} + \varepsilon_{it},\ \text{and}
\end{aligned}
$$

$$
\begin{aligned}
(2)\quad \text{FPerf}_{i[\text{average}(t,t+1)]} = {} & \beta_0 + \beta_1\text{CPower}_{it} + \beta_2\text{CM\&S}_{it} \\
& + \beta_3\text{CPower}_{it} \\
& \times (\text{TMTDivsln}_{it}\text{or UDivsfn}_{i(t-1)}) \\
& + \beta_4\text{TMTDivsln}_{it} + \beta_5\text{UDivsfn}_{i(t-1)} \\
& + \sum_{j=1}^{4}\beta_{j+5}\text{Time}_{jt} \\
& + \sum_{k=1}^{3}\beta_{k+9}\text{IndControls}_{ki(t-1)} \\
& + \beta_{13}\text{TimeConstFirmControl}_i \\
& + \sum_{m=1}^{5}\beta_{m+13} \\
& \quad \text{TimeVaryFirmControls}_{mi(t-1\text{ or }t)} \\
& + \sum_{n=1}^{6}\beta_{n+18}\text{TMTControls}_{nit} \\
& + \beta_{25}\lambda_{it} + \mu_{it},
\end{aligned}
$$

where i is the individual firm, and t is the year of observation, LCPower is ln[CPower/(1 – CPower)], where CPower is CMO power, as described previously, FPerf is either firm sales growth or firm ROS, IndInstab (dropped in models with industry-level dummies), FirmInnov, MktExpTMT, and CM&S are the sources of CMO power—namely, industry instability, firm innovation, TMT marketing experience, and the CMO's additional responsibility for sales dummy, respectively, Time is the dummy for 2002, 2003, 2004, or 2005, with 2001 as the base year, IndControls (dropped in models with industry-level dummies) are the industry level controls—namely, industry sales growth and market concentration in Equations 1 and 2, plus industry instability in Equation 2, TimeConstFirmControl is the firm-level dummy that controls for whether the firm is a B2C or mixed firm (versus a B2B firm) and is assumed to be constant over time, TimeVaryFirmControls are the firm-level controls that vary over time—namely, firm total diversification dummy only in Equation 1, firm innovation, firm differentiation, and acquisition active firm dummy only in Equation 2, the last of which is measured in time t, and firm size, prior firm sales growth, and prior firm ROS in Equations 1 and 2, though in Equation 2, only prior ROS is used when sales growth is the outcome, and only prior sales growth is used when ROS is the outcome, TMTControls are the TMT level controls—namely, TMT size, TMT levels, COO presence dummy, and log of CEO tenure in Equations 1 and 2, TMT divisionalization and TMT size squared only in Equation 1, and TMT marketing experience and outsider CEO dummy only in Equation 2, TMTDivsln and UDivsfn are TMT divisionalization and the firm-unrelated diversification dummy, λ is the inverse Mills ratio that controls for sample selection bias, as we described previously, and ε and μ are the error terms.

Results

Few of the pooled correlations exceeded .5, except those of TMT size with CMO power and firm size (see Table 1, which also includes descriptive statistics). However, all variance inflation factors and condition indexes are less than 5 and 13, respectively, thus, multicollinearity is not a problem (Wooldridge 2003). Moreover, our results do not change substantively if TMT size is dropped for analyzing performance outcomes and if firm size is dropped for CMO power.

Sources of CMO Power in the TMT

The results related to the sources of CMO power appear in Table 2 and are similar whether we use industry-level variables (Model 1) or industry dummies (Model 2). The results do not support H_1 and H_2 regarding the respective effects of industry instability and firm innovation on CMO power. However, in a post hoc analysis (described subsequently), we explore reasons for this and find conditional support for H_2. As we expected, marketing experience in the TMT had a significant, negative effect on CMO power ($p < .01$), thus, the results support H_3. In support of H_4, the additional responsibility of sales gives CMOs greater power ($p < .05$).[7] In addition, as we expected, the control of TMT size was negatively related to CMO power, when we included a squared term, this relationship was curvilinear. None of the results reported here differed when we included this square term, however, the number of levels and divisionalization that were negatively significant (at $p < .10$) became nonsignificant. None of the other controls were significant.

Post Hoc Analysis of Nonsignificant Sources of CMO Power in the TMT

We hypothesized that both the nonsignificant sources of CMO power, industry instability and firm innovation,

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[7] To address a possible concern (for which we are grateful to an anonymous reviewer) that CMO power increases the likelihood of CMOs with this dual responsibility (referred to as marketing and sales here) and not the other way around as we argue, we carry out a Granger test to rule out reverse causality. In a model with marketing and sales as the dependent variable, we find that lagged CMO power is not significant but lagged marketing and sales is, conversely, in a model with CMO power as the dependent variable, both these variables are significant. Therefore, we rule out the possibility of reverse causality and, in further support of this claim, note that marketing and sales changes for a firm only on 15 occasions (out of 299 firm years).

TABLE 1
Descriptive Statistics and Correlation Coefficients

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	CMO power$_t$	09	(04)																			
2	Industry instability$_{t-1}$	09	(05)	06																		
3	Firm innovation (R&D/sales)$_{t-1}$	11	(09)	17***	33***																	
4	TMT marketing experience$_{t-1}$	18	(14)	–18***	02	–01																
5	CMO responsible for sales$_t$	32	(47)	36***	–12**	09	–18***															
6	Industry sales growth$_{t-1}$	11	(07)	–11*	10*	21***	03	–20***														
7	Market concentration$_{t-1}$	05	(04)	02	13**	–25***	–11*	–13**	08													
8	Firm size (log of employees)$_{t-1}$	3 74	(66)	–42***	–08	–27***	–06	–07	04	12**												
9	Diversified (versus undiversified) firm$_{t-1}$	40	(49)	–20***	09	–29***	–07	–10*	04	35***	50***											
10	B2C or mixed (versus B2B) firm	42	(49)	–15***	–20***	–33***	14**	–16***	05	17***	27***	15***										
11	Prior firm sales growth$_{t-1}$	11	(26)	03	–08	–03	–01	04	09	–10*	–14**	–19***	04									
12	Prior firm ROS$_{t-1}$	11	(17)	–22***	–12**	–04	14**	–03	37***	–08	22***	03	26***	24***								
13	TMT size$_t$	10 29	(4 48)	–71***	–07	–13**	04	–25***	17***	05	63***	34***	28***	01	29***							
14	TMT levels$_t$	3 60	(89)	–23***	03	–01	00	–04	08	–12**	25***	19***	04	00	03	32***						
15	TMT divisionalization$_t$	17	(15)	–28***	14**	–05	08	–04	–01	–07	30***	24***	09	–09	10*	21***	02					
16	COO presence$_t$	26	(44)	–19***	05	–12**	–05	06	00	–06	08	00	–11*	11**	–02	16***	41***	–05				
17	CEO tenure (log)$_t$	69	(38)	05	05	01	02	01	–11*	–02	–17***	–09	–21***	07	–02	–17***	09	–16***	24***			
18	λ (inverse Mills ratio)$_t$	37	(12)	07	03	–09	04	–03	00	02	–12**	01	–04	07	–10*	–21***	–04	03	11**	01		
19	Firm sales growth$_{\text{average}(t,t+1)}$	01	(15)	–08	06	–03	–11*	09	–04	–04	–07	–17***	21***	16***	17***	06	–06	–03	04	03	02	
20	Firm ROS$_{\text{average}(t,t+1)}$	08	(16)	–19***	–18***	00	12**	–01	19***	–17***	20***	07	32***	08	65***	27***	–04	09	–06	–05	–07	23***

*$p < 10$
**$p < 05$
***$p < 01$
Notes The table shows correlations between measures pooled across 299 firm years (unbalanced panel of 77 firms observed over five years), yearwise *p*-values may differ and are available on request We do not report some control variables used in the models of performance in the interest of space

TABLE 2
Sources of CMO Power in the TMT

	Model 1	Model 2[a]	Support for Hypotheses	Post Hoc Test of Interactions Using Model 2[a,b]
Independent Variables				
Industry instability (H_1)	51 (45)	–	No	–
Firm innovation (H_2)	13 (34)	33 (34)	No	31 (34)
TMT marketing experience (H_3)	– 43 (14)**	– 47 (14)**	Yes	– 45 (14)**
CMO responsible for sales (H_4)	17 (07)*	15 (07)*	Yes	14 (07)*
Firm innovation × TMT marketing experience[b]			H_2 (conditional, post hoc)	–3 64 (1 47)*
Control Variables				
Year dummies[c]	Included	Included		Included
Industry sales growth	– 05 (41)	–		–
Market concentration	– 23 (54)	–		–
Firm size	01 (06)	02 (05)		03 (05)
Diversified (versus undiversified) firm	05 (06)	07 (06)		06 (06)
B2C or mixed (versus B2B) firm	02 (07)	03 (06)		04 (09)
Prior firm performance (sales growth)	05 (08)	05 (09)		04 (09)
Prior firm performance (ROS)	08 (12)	08 (11)		09 (11)
TMT size	– 09 (01)**	– 09 (01)**		– 09 (01)**
TMT size^2	00 (00)*	00 (00)*		00 (00)*
TMT levels	– 03 (03)	– 03 (03)		– 04 (03)
TMT divisionalization	– 22 (16)	– 21 (15)		– 21 (15)
COO presence	– 07 (06)	– 06 (05)		– 04 (05)
CEO tenure	– 07 (07)	– 07 (07)		– 06 (07)
λ[d]	01 (15)	01 (15)		01 (15)
Industry dummies[a]	–	Included		Included
Constant	–2 47 (07)**	–2 49 (07)**		–2 48 (07)**

*$p < 05$
**$p < 01$
[a] Model 2 uses two-digit SIC-level dummies for the ten industries instead of all industry-level variables Three industries (SICs 25, 26, and 33) had only one firm each We collapsed these into one dummy to ensure linear independence, which resulted in seven dummies being used, none of these were significant
[b] We tested four interactions (see the post hoc analysis in the "Results" section), only one was significant, as shown, with similar results when we used Model 1
[c] We included four year dummies for 2002–2005, with 2001 as the base year, none of these dummies were significant in any of the models
[d] We computed the inverse Mills ratio from a first-stage probit regression of CMO presence, the details are available on request (see the "Analyses" subsection)
Notes The table shows parameter estimates, with standard errors adjusted for clustering at the firm-level in parentheses, resulting from GEE (Gaussian family, identity link, AR(1) correlation structure, N = 299 firm years), with CMO power as the dependent variable Model 1 $\chi^2(22) = 510\ 76$, $p < 001$, Model 2 $\chi^2(26) = 490\ 87$, $p < 001$, and post hoc Model 2 $\chi^2(27) = 498\ 44$ ($p < 001$)

would increase CMO power, in accordance with the rationale of criticality We argued that they cause TMT uncertainty that is market/consumer related This would make them sources of greater CMO power because they render the CMO's resources that are in the marketing domain (resources that are best able to reduce such uncertainty) critical to the TMT However, if under certain conditions other TMT executives also possess or control these or similar resources, this uncertainty would increase their power as well, in accordance with the same rationale of criticality As a result, when such conditions are present, CMO power would not increase as much with these sources of power, because power is a zero-sum game, in turn, this would weaken the main effects hypothesized for these sources, possibly even making them nonsignificant, as we find

We argue that these conditions most likely occur (1) as TMT marketing experience increases, because there is an increasing proportion of TMT executives with resources (e g , skills) that are similar to those of the CMO, and (2) when the CMO does not have the additional responsibility of sales, because other TMT executives now control sales' resources that are closely related to those of marketing Essentially, we suggest moderator effects of at least one of these two variables on each of the nonsignificant sources (i e , industry instability and firm innovation)

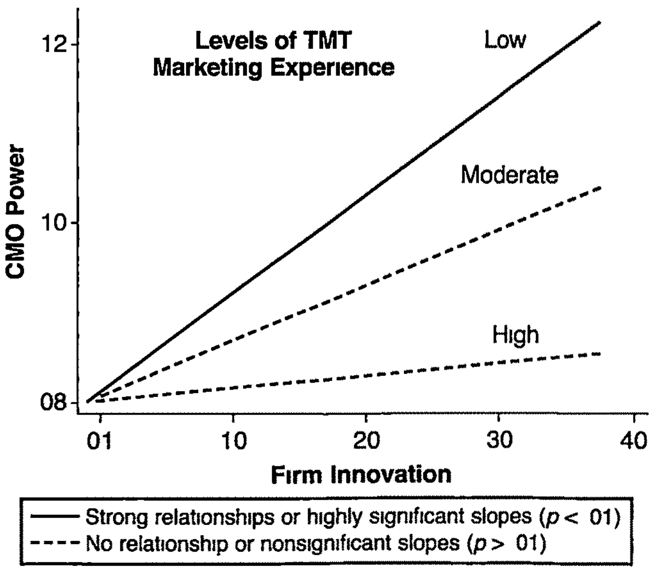
We test for the four possible moderator effects by separately entering each interaction they suggest in Models 1 and 2 (of Table 2) after mean centering the interacting variables In the interest of space, we show results of this post hoc analysis only if the interactions are significant Because the results were similar across both Models 1 and 2, we also do so only for Model 2 The interactions of industry instability with both possible moderators and of firm innovation with the CMO's additional responsibility of sales dummy were not significant The only significant interaction was that between firm innovation and TMT marketing experience, as we show in the last column of Table 2 ($p < 05$, following Hardin and Hilbe [2003], we tested interactions with the generalized Wald test, which is part of this displayed output) To explore whether this interaction supports our post hoc arguments, we use procedures that Aiken and West (1991) recommend, analyzing main and interaction effects using only these two variables in the model

We find that firm innovation is positively related to CMO power ($p <$ 01) when we use the value of TMT marketing experience computed at one standard deviation below its mean, which is 0 because it is mean centered However, this relationship is not significant when we use either the mean value of TMT marketing experience or its value computed at one standard deviation above the mean Therefore, this interaction implies that the hypothesized effect of firm innovation on CMO power is substantially weakened or moderated as TMT marketing experience increases (see Figure 2), in line with our post hoc arguments Seemingly, market-/consumer-based TMT uncertainty from innovation also increases the power of other TMT executives with resources similar to the CMO, in accordance with the rationale of criticality The interaction and Figure 2 also show that CMO power increases with firm innovation, as we hypothesized, but only at low levels of TMT marketing experience, thus allowing us to claim conditional support for H_2 [8]

Outcomes Related to CMO Power and to Sources of CMO Power in the TMT

Table 3 shows the results with respect to our tests of outcomes related to CMO power for sales growth in Models 1a, 1b, and 1c and for ROS in Models 2a and 2b Again, our results using either industry dummies or industry-level variables are the same, therefore, in the interest of space, we show only the former in Table 3 We did not find support for H_5 in any of these models, because the coefficient for CMO power was always nonsignificant As H_6 predicted, the CMO's additional responsibility for sales was positively related to performance, albeit only in the model with sales growth as the dependent variable Thus, the results support H_6 ($p <$ 10 in Model 1b and $p <$ 05 in Model 1c) We entered interaction terms for testing H_7 and H_8 separately, we show only the models with significant interactions In support of H_7, the first significant interaction is between CMO power and TMT divisionalization, with sales growth as the dependent variable ($p <$ 05) In support of H_8, the second is between CMO power and unrelated firm diversification, with ROS as the dependent variable ($p <$ 05)

FIGURE 2
Moderation of Firm Innovation → CMO Power Relationship by TMT Marketing Experience



Notes Mean-centered values are converted back to raw scores for the x- and y-axes

To explore the interaction with TMT divisionalization, rather than using recommended standard deviations above or below its mean, we categorized it because the distribution of this variable was skewed Approximately 30% of the values (84 firm years) of this variable were zero, indicating functionally organized TMTs The remaining values were split around 25, with 109 having values below it and 106 having values equal to or above it, corresponding to moderately and highly divisionalized TMTs, respectively We created three dummy variables, each coded as 1 when the raw value was in one of these three ranges and 0 otherwise We then entered each separately and tested for the interaction with CMO power The only significant interaction was that of CMO power with the high TMT divisionalization dummy ($p <$ 05) As Panel A of Figure 3 illustrates, this interaction shows that the CMO power–firm performance (sales growth) relationship, rather than only being stronger, is actually positive only in highly divisionalized firms We tested the second significant interaction between CMO power and the dummy for unrelated diversification in a similar manner, this variable was already dichotomized As Panel B of Figure 3 illustrates, the CMO power–firm performance (ROS) relationship, rather than only being weakened, is actually negative ($p <$ 05) in unrelated diversifiers

Discussion and Implications

The objectives of this research were to determine the sources of and outcomes related to the CMO's power in the firm's TMT Our conceptual model in Figure 1 shows the relationships we expected to observe, and Tables 2 and 3 summarize the tests of these hypothesized relationships for sources and outcomes, respectively Our results show that CMO power is greater when the CMO position is also responsible for sales than when it is not We also find that marketing experience (the lack of marketing experience) in the TMT reduces (increases) CMO power We expected firm innovation to increase CMO power but find this relationship to hold only when TMT marketing experience is low, as Figure 2 illustrates For outcomes, we do not find a main effect for CMO power on firm performance measured by either sales growth or ROS However, CMO power increases sales growth in firms with TMTs that have a relatively high proportion of divisional heads (as Figure 3, Panel A, illustrates) and decreases ROS for firms pursuing unrelated diversification

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[8] The nonsignificance of industry instability (H_1) is still unexplained, we address this issue in the "Discussion and Implications" section

TABLE 3
Outcomes Related to CMO Power in the TMT

Dependent Variables	Sales Growth			ROS	
	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b
Independent and Moderator Variables[a]					
CMO power (H_5)	– 10 (33)	—	– 12 (31)	11 (28)	30 (28)
CMO responsible for sales (H_6)	—	04 (02)*	05 (02)**	00 (02)	00 (02)
CMO power × TMT divisionalization (H_7)	—	—	2 68 (1 34)**	—	—
CMO power × (unrelated) diversified firm (H_8)	—	—	—	—	–1 15 (56)**
TMT divisionalization	04 (06)	05 (06)	05 (06)	04 (04)	02 (04)
(Unrelated) diversified firm	– 01 (04)	– 02 (04)	– 01 (04)	– 02 (02)	– 02 (02)
Control Variables					
Year dummies[b]	Included	Included	Included	Included	Included
Industry sales growth	– 18 (17)	– 14 (17)	– 12 (17)	84 (21)	82 (20)
Market concentration	10 (24)	11 (24)	10 (23)	– 46 (36)	– 41 (33)
Industry instability	– 18 (30)	– 14 (30)	– 15 (30)	– 39 (20)***	– 38 (20)***
Firm size	– 03 (03)	– 04 (03)	– 03 (03)	03 (03)	02 (03)
B2C or mixed (versus B2B) firm	07 (03)**	07 (03)**	07 (03)**	07 (03)**	07 (03)**
Prior firm performance[c]	03 (06)	03 (06)	02 (06)	00 (02)	00 (02)
Firm innovation	29 (17)*	25 (17)	27 (18)	– 18 (14)	– 17 (15)
Firm differentiation	48 (45)	46 (46)	44 (44)	17 (35)	22 (34)
Acquisition active firm	03 (01)*	03 (01)*	02 (01)	– 01 (01)	– 01 (01)
TMT size	00 (00)	00 (00)	00 (00)	00 (00)	00 (00)
TMT levels	02 (01)	02 (01)	01 (01)	– 01 (01)	– 01 (01)
TMT marketing experience	– 03 (07)	– 02 (06)	– 03 (06)	02 (05)	03 (05)
COO presence	– 01 (02)	– 01 (02)	– 01 (02)	03 (02)*	03 (02)
CEO tenure	00 (02)	01 (02)	01 (02)	02 (02)	02 (01)
Outsider CEO	04 (02)*	05 (02)*	04 (02)*	– 03 (02)	– 03 (02)
λ[d]	09 (06)	09 (06)	07 (06)	– 01 (04)*	– 02 (03)*
Constant	– 05 (04)	– 07 (04)*	– 07 (04)*	01 (03)	01 (03)

*$p < 10$
**$p < 05$
***$p < 01$

[a] Nonsignificant results that are not shown separately or are not reported at all are tests of H_5, H_6, and H_7 with ROS and of H_8 with sales growth

[b] We included four year dummies for 2002–2005, with 2001 as the base year, the only (positive) significant ones were 2003–2005 in Models 2a and 2b

[c] Sales growth for the ROS model and ROS for the sales growth model

[d] We computed the inverse Mills ratio from a first-stage probit regression of CMO presence, the details are available on request (see the "Analyses" subsection)

Notes The table shows parameter estimates, with standard errors adjusted for clustering at the firm-level in parentheses, resulting from GEE (Gaussian family, identity link, AR(1) correlation structure, N = 299 firm years), with either ROS or sales growth as the dependent variable Model 1a $\chi^2(23) = 64\ 69$, $p < 001$, Model 1b $\chi^2(23) = 69\ 77$, $p < 001$, Model 1c $\chi^2(25) = 77\ 26$, $p < 001$, Model 2a $\chi^2(24) = 99\ 27$, $p < 001$, and Model 2b $\chi^2(25) = 105\ 46$, $p < 001$

(as Figure 3, Panel B, illustrates) Finally, we find that firms whose CMO's have the additional responsibility of sales, a source of CMO power, have superior sales growth to firms whose CMOs do not have this responsibility

Implications for Theory and Further Research

Marketing influence This research adds to the few theoretically driven empirical studies on marketing's influence in the C-suite (Nath and Mahajan 2008, Piercy 1989a) While we reinforce Piercy's (1989a) finding related to CMO power increasing with the control of sales forecasting—or more broadly, the sales function in our research—we also build on his work and identify additional sources of CMO power We argued for these sources and their effects on CMO power by drawing on Hickson and colleagues' (1971) and Pfeffer's (1981) theories of intraorganizational power, according to which CMO power should increase with (1) the CMO's control over informational, human, relational, and organizational resources in the marketing domain, (2) the criticality of these resources to the TMT, (3) the effectiveness with which the CMO provides these resources to the TMT, (4) the nonsubstitutability of the CMO or these resources, and (5) the centrality of the CMO or these resources in the TMT[9]

We used three of these rationales—control, effectiveness, and centrality—to argue that CMO power increases with the CMO's additional responsibility of sales, which we find to be the case Another rationale, nonsubstitutability (or substitutability), was the basis for our expectation that

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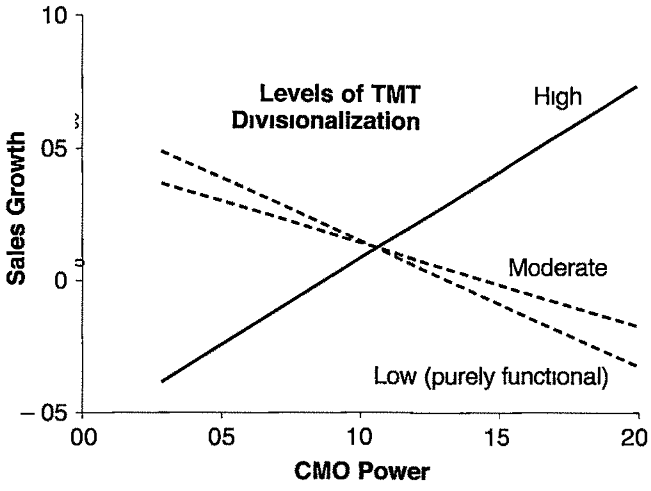
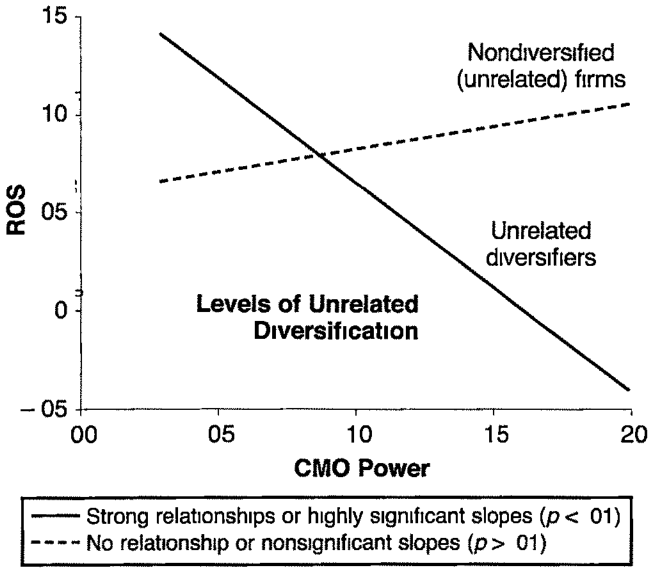
[9] Figure 1 links these rationales to the sources of power hypothesized using them, for ease of representation, the ordering of rationales is slightly different in the model, and substitutability replaces nonsubstitutability

FIGURE 3
Outcomes Related to CMO Power

A· Interaction of CMO Power with TMT Divisionalization in Model of Sales Growth



B: Interaction of CMO Power with Unrelated Firm Diversification in Model of ROS



Notes Mean-centered values are converted back to raw scores for the x-axes in both panels The y-axes in both panels show values after we control for industry effects by subtracting industry medians

CMO power would decrease with TMT marketing experience, the results strongly support this prediction Finally, we expected criticality to increase with firm innovation, leading to greater CMO power, we find conditional support for this Thus, this research also adds to Nath and Mahajan's (2008) study by adding these five empirically supported rationales to the one used largely in their study for identifying drivers of CMO presence—namely, that of TMT complexity in the marketing domain In doing so, we provide a more complete picture of the drivers of marketing influence in the C-suite

We also expected industry instability, similar to firm innovation, to increase CMO power in accordance with the rationale of criticality, but this was not significant However, our post hoc analysis shows that the logic of criticality is still relevant because we find the expected effect of firm innovation on CMO power, albeit only at low levels of TMT marketing experience The main effect in this case was also not significant, but we argued and demonstrated that this was because innovation also increased the power of other TMT executives with similar resources A possible reason for the overall nonsignificance of industry instability is that marketing-related uncertainty stemming from the industry is more relevant at the SBU level than at the corporate level (Homburg, Workman, and Krohmer [1999] find significant industry-level effects for marketing department influence at the SBU level) Notably, Nath and Mahajan (2008) also do not find any industry-level factors to be predictive of CMO presence and provide possible reasons, which we do not repeat here in the interest of space Although additional research is warranted, these findings suggest that marketing influence in the C-suite is more a function of factors that are internal rather than external to the firm and the TMT[10]

Our theoretical approach contributes more generally to research on marketing's influence and its role at all levels of the firm (Anderson 1982, Day 1992, Homburg, Workman, and Krohmer 1999, Moorman and Rust 1999, Varadarajan 1992, Verhoef and Leeflang 2009, Webster, Malter, and Ganesan 2003) First, although prior research has discussed or explored the link between marketing influence and performance, ours is the first to hypothesize and test moderators of this relationship Moreover, we do not find main effects, rather, we find that CMO power can be good or bad for performance depending on TMT divisionalization and firm diversification We argued that this was because power allows CMOs to improve performance by aligning diverse marketing plans under powerful divisional heads, but it may not be beneficial for unrelated diversifiers, in which divisional agendas are intentionally separated Although additional research on the issue is warranted, it also points to the need for studies that go beyond the assumption that more marketing influence is always better This would also help clarify some of the mixed results with respect to this relationship Moorman and Rust (1999) find a positive relationship, but Verhoef and Leeflang (2009) do not, and neither do we As we point out in our theoretical discussion, power is intertwined with politics, and greater influence may not always be optimal Rather, there may be conditions that warrant more or less marketing influence, making it imperative for marketing academics to study them

Second, by distilling theories of intraorganizational power (Hickson et al 1971, Pfeffer 1981) and offering five distinct rationales of power, we provide a systematic way to analyze sources of marketing power or influence As we do with the CMO's resources, albeit at a conceptual level, it is first important to take the view that marketing's role is to provide resources to other actors/units in the firm After marketing's resources are identified, factors that affect the control, criticality, effectiveness, nonsubstitutability, and centrality of these resources can be used to infer marketing influence. Prior research has considered only one or some of these rationales simultaneously and has rarely explored possible interactions between them, as we did in our post hoc analysis (see Homburg, Workman, and Krohmer 1999, Moorman and Rust 1999).

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[10] We thank an anonymous reviewer for suggesting this internal–external distinction

Finally, to the extent that CMO presence represents one facet of marketing influence in the C-suite, our results also shed light on Nath and Mahajan's (2008) finding that CMO presence in the TMT does not positively or negatively affect firm performance (Kashmiri and Mahajan [2010] also report a similar result). This finding had led to some debate on the issue of whether CEOs should have a CMO in the TMT (Frazier 2007). What we find is that across firms that have the CMO position in the TMT, some perform better than others. Our findings with respect to the conditional effects of CMO power on firm performance discussed previously provide one reason for this. Differences in CMO power can cause some firms to perform better than others. Another reason that can be derived from our research is that differences in CMO responsibility can cause some firms (those with CMOs who are also responsible for sales) to perform better than others (those with CMOs who are not) (for other explanations, see Boyd, Chandy, and Cunha 2010). As a result, averaging and comparing the performance of firms with a CMO in the TMT with those that do not have a CMO in the TMT is more likely to lead to findings similar to those of Nath and Mahajan (2008). Therefore, we encourage additional research along these lines to shed further light on the issue of CMO presence.

Marketing and sales integration. This research also makes a significant contribution to the body of work on the contentious issue of whether marketing and sales should be integrated (Homburg and Jensen 2007, Homburg, Jensen, and Krohmer 2008). We argued that CMOs responsible for both these functions are able to successfully integrate them, improving cooperation while managing the tensions of their differing long- and short-term worldviews. Consequently, we expected an increased effectiveness for such CMOs in providing resources to the TMT, leading to superior firm performance outcomes, which is what we find for sales growth. This suggests that marketing and sales should be integrated, as long as structural mechanisms such as a CMO are in place. However, because we do not explicitly measure CMO effectiveness, further research is warranted.

Market orientation. Finally, we comment on the inverse relationship between TMT marketing experience and CMO power. Nath and Mahajan (2008) find that TMT marketing experience increases the likelihood of CMO presence, based on the logic of homophily. To the extent that TMT marketing experience represents market orientation in the TMT (Weinzimmer et al. 2003), it would seem that it increases one facet of marketing influence, CMO presence, but decreases another, CMO power. Thus, CMO power being less in firms that have relatively more TMT executives with marketing backgrounds might not be sufficient cause for alarm, because at the very least, such firms are still market oriented (note that we cannot make a strong claim about this, because we do not explicitly measure market orientation).

Managerial Implications

Chief marketing officers have been offered various prescriptions for success that include being the customer's voice in the firm and redefining their role as one that is strategic (Kerin 2005, McGovern and Quelch 2004). Carrying these out involves change, which is arguably more likely to occur when the CMO has greater power in a political setting such as the C-suite. Therefore, CMOs benefit from our findings because we provide five rationales that they can use to identify sources of power that may be idiosyncratic to their role, their TMT, their firm, and/or their industry. In this research, we used these rationales to identify specific sources of power for the CMO based on his or her position in the TMT hierarchy. These were the additional responsibility of sales, low levels of TMT marketing experience, and increasing innovation in the presence of low TMT marketing experience. More generally, however, CMOs should explore ways to control more critical resources and be central, effective, and nonsubstitutable in the TMT.

Our finding that the CMO's additional responsibility of sales improves sales growth also leads to important implications for CMOs because, arguably, CMO success is tied to the firm's success. First, CMOs without this responsibility are encouraged to improve their cooperation with the sales heads, while maintaining their long-term orientation in contrast with the sales function's short-term one. This kind of integration, which, we argue, CMOs with the additional responsibility of sales achieve, ensures the best of both worlds. Second, our rationale for this finding is the increased effectiveness in resource provision to the TMT, which in turn suggests that CMOs should aim to achieve such effectiveness with respect to the resources they control.

Finally, we offer recommendations to CEOs regarding structural choices related to the CMO position. Our findings suggest that CEOs can improve firm performance if this position is given greater power in highly divisionalized settings and if it is endowed with some control over the sales function. However, for CEOs heading firms that are pursuing unrelated diversification, a powerful CMO position may be detrimental to performance.

Limitations and Additional Suggestions for Further Research

First, we adopt a structural view of CMO power by studying the potential influence derived from the CMO's position in the TMT hierarchy, a desirable approach given the lack of prior research on marketing influence in the C-suite. Future research extensions could take a behavioral perspective by focusing on the person occupying this position and by studying his or her actual influence on specific decisions that TMTs make as well as the influence strategies (Venkatesh, Kohli, and Zaltman 1995) and personality characteristics (Frost 1987) that affect them. This would further our knowledge regarding marketing influence, and it would also shed more light on why there was no main effect of CMO power on firm performance in our research, it is possible that these person-specific characteristics matter Such efforts would also need to control for the CMO's structural power in the TMT, thus shedding light on how CMO's potential influence affects his or her actual influence in various decisions

Second, prior research has linked power to the further acquisition of resources by the powerful (Piercy 1989a, Salancik and Pfeffer 1974) Therefore, future longitudinal studies could explore the extent to which marketing influence in the C-suite affects the allocation of resources to the firm's marketing organization and the development of capabilities such as market orientation For example, Verhoef and Leeflang (2009) find a bidirectional relationship between top management respect for marketing and market orientation, but they are unable to infer causality given cross-sectional data Finally, although centrality in the C-suite was a rationale for CMO power, we did not explicitly measure it for the CMO's network either within the TMT or outside of it, given the availability of secondary data on CMOs Research using primary data could shed light on the relevance of some of these factors as possible sources of CMO power

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Blair Kidwell, David M. Hardesty, Brian R. Murtha, & Shibin Sheng

Emotional Intelligence in Marketing Exchanges

This research examines how sales professionals use emotions in marketing exchanges to facilitate positive outcomes for their firms, themselves, and their customers The authors conduct three field studies to examine the impact of emotional intelligence (EI) in marketing exchanges on sales performance and customer relationships They find that EI is positively related to performance of real estate and insurance agents, even when controlling for the effects of domain-general EI, self-report EI, cognitive ability, and several control variables Sales professionals with higher EI are not only superior revenue generators but also better at retaining customers In addition, the authors demonstrate that EI interacts with key marketing exchange variables—customer orientation and manifest influence—to heighten performance such that high-EI salespeople more effectively employ customer-oriented selling and influence customer decisions Finally, the results indicate a complementary relationship between EI and cognitive ability in that EI positively influences performance at higher levels of cognitive ability These findings have implications for improving interactions between buyers and sellers and for employee selection and training

Keywords emotion, emotional intelligence, marketing exchange, cognitive ability, sales performance

> An area neglected by marketers, but at the heart of the discipline, is the role of emotions in marketing exchanges and relationships (Bagozzi, Gopinath, and Nyer 1999, p 202)

Emotions constitute powerful psychological forces that can strongly influence sales professionals' behavior and performance (Brown, Cron, and Slocum 1997), yet understanding of how emotions are interpreted and employed in marketing exchanges remains surprisingly limited (Bagozzi, Gopinath, and Nyer 1999) Although several studies have examined specific emotions in marketing encounters such as fear and anxiety (Verbeke and Bagozzi 2000), cheerfulness and excitement (Chitturi, Raghunathan, and Mahajan 2008), gratitude (Palmatier et al 2009), anger and frustration (Wagner, Hennig-Thurau, and Rudolph 2009), and shame and guilt (Agrawal and Duhachek 2010), research has not addressed salespeople's abilities to recognize and respond to their own and their customers' emotions and have not considered how these abilities affect important marketing exchange variables We refer to marketers' ability to use emotions to facilitate interactions with customers as emotional intelligence (EI) in marketing exchanges

Emotional intelligence is the ability to acquire and apply knowledge from one's emotions and those of others to produce beneficial outcomes The marketing literature has largely ignored this ability-based conceptualization of EI despite its potential to benefit people who have high EI and also those with whom they interact, such as customers, in exchange relationships For example, recent research has suggested that sellers' greater emotion recognition during negotiations with buyers can increase payoffs for both sellers and buyers (Elfenbein et al 2007) By increasing joint value, sales professionals create greater outcome satisfaction for buyers and increase the likelihood of future business (Martin et al 2008, Mueller and Curhan 2006) In addition, research in a service setting suggests that employees' displays of emotion can affect customers' affective states and satisfaction (Hennig-Thurau et al 2006) Thus, EI has the potential to improve current sales performance and enhance long-term customer relationships

Unfortunately, two important issues have hindered the development of this stream of inquiry First, in general, prior research has used a domain-general assessment of EI (e g , Mayer et al 2003) The results based on these assessments have offered mixed support for job-related outcomes (e g , Zeidner, Matthews, and Roberts 2004), which may occur because people have high EI in some contexts (e g , marriage, music) but not in others (e g , selling) Thus, a general assessment of EI may adequately address broad domains but do poorly when predicting performance in specific contexts (Bearden, Hardesty, and Rose 2001)

Second, EI is often assessed with self-report measures, which are susceptible to faking (Day and Carroll 2008) and therefore are "not valid for the direct assessment of a mental ability" (Mayer, Roberts, and Barsade 2008, p 519)

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ISSN 0022-2429 (print), 1547-7185 (electronic)

Moreover, prior research has found that self-report measures of EI are highly correlated with personality (Mayer, Roberts, and Barsade 2008, Zeidner, Matthews, and Roberts 2004), which can mask the distinctive effects of EI on important job-related outcomes. Given these limitations, research has been sparse regarding EI's influence in marketing exchanges.

The current research overcomes these shortcomings and contributes to the literature first by introducing the concept of EI in marketing exchanges. We develop an ability-based, objective assessment of EI and provide substantial evidence that EI affects sales performance and enhances customer relationships beyond domain-general and self-reported EI.

Second, we show how EI fits within the nomological network of prominent relationships among marketing exchange variables. Prior research has demonstrated the importance of enhancing sales performance by using customer orientation to influence decision making. Thus, understanding how EI might accentuate relationships is critical to enhancing understanding of marketing exchanges. We underscore the moderating role of EI in marketing exchange relationships by showing that increasing levels of EI enhance the positive relationships between customer orientation and manifest influence on sales performance—two variables with a rich history in the marketing exchange literature (Franke and Park 2006, Kohli and Zaltman 1988, McFarland, Challagalla, and Shervani 2006, Narver and Slater 1990).

Third, we show how EI is related to and interacts with cognitive ability, notably one of the most widely used performance predictors (Schmidt, Shaffer, and Oh 2008) and the basis for hiring decisions and training worldwide (Hunter and Schmidt 1998), even though research has indicated that cognitive ability inconsistently predicts sales performance (Verbeke et al. 2008). Thus, to the extent that EI complements cognitive ability and/or predicts sales performance beyond cognitive ability, managers may have a new tool for more effective hiring and training decisions.

Therefore, to understand how emotions affect marketing exchanges, we conduct three field studies across two contexts: real estate and insurance sales. In the next sections, we review EI and its dimensions, present our hypotheses, describe the data collection process, and discuss the results and implications of our research for theory and practice.

Theoretical Background

Partly because understanding how people think about and use their emotions in everyday life is increasing in importance (Goleman 1995), EI has generated widespread international attention over the past 15 years (Roberts, Zeidner, and Matthews 2001). Understanding and using emotions is particularly salient in marketing exchanges because marketing involves customers, suppliers, and internal collaborators. Indeed, recent estimates indicate that 75% of *Fortune* 500 companies promote EI and that 90% of top performers in virtually every industry have high EI (TalentSmart 2009). As more companies embrace EI, it is important to understand how and why it influences marketing exchanges. Next, we provide an overview of EI and its dimensions.

The mental-ability framework of EI is a composite of distinct reasoning abilities that enable people to process emotion-relevant information (Mayer, Salovey, and Caruso 2000) and is assessed with objective, performance-based measures (Mayer, Salovey, and Caruso 2002). In addition, Mayer and Salovey (1997) propose a higher-order structural model of EI. Scores on each dimension's subscales form four first-order dimensions—perceiving, facilitating (or using), understanding, and managing emotion—which are then summed to form a second-order factor of EI. Next, we describe the four emotional ability dimensions as they pertain to marketing exchanges.

Perceiving emotion is the ability to recognize and appraise emotions accurately (Mayer, Caruso, and Salovey 1999). Perceiving involves awareness and the ability to interpret and differentiate emotions in the self and in others (Roberts, Zeidner, and Matthews 2001). Specific to marketing exchanges, perceiving involves recognizing emotions from facial expressions. For example, emotionally perceptive sales professionals are more likely to recognize when a customer is bored or excited, interested or confused, and relaxed or annoyed. Such perceptions can provide information that salespeople can use to adapt their approaches and effect successful exchanges.

Facilitating (or using) emotion is the ability to access, generate, and use emotions to facilitate thought (Mayer and Salovey 1997). This EI dimension involves mentally assimilating basic emotional experiences (Mayer, Salovey, and Caruso 2000) and includes weighing emotions against one another and against other sensations and thoughts. It allows emotions to focus attention so they can be marshaled in the service of a goal and is an essential component for selective attention, self-monitoring, and self-motivation (Roberts, Zeidner, and Matthews 2001). Specific to marketing exchanges, facilitating emotion involves knowing which emotions are appropriate in sales interactions. For example, sales professionals who use emotions in marketing exchanges more effectively better perceive the customers' feelings, know which emotions to display, and are aware of how their emotions affect customers.

Understanding emotion is the ability to analyze complex emotions and form emotional knowledge (Mayer and Salovey 1997). It involves reasoning and understanding emotional problems, such as knowing which emotions are similar and what they convey. Sales professionals high in emotional understanding are better equipped to know how emotions blend—for example, how pride and joy can lead to elation or annoyance and anxiety to anger—and how these emotions can change during exchanges. For example, salespeople are at a distinct advantage when they understand that anxious customers are likely to become frustrated.

Finally, managing emotion is the ability to regulate emotions in the self and in others to achieve a desired outcome (Mayer and Salovey 1997). In marketing exchanges, this dimension involves salespeople's ability to maintain composure in the presence of negative emotions and to influence customers' emotional responses positively. Salespeople proficient in managing emotion are also effective at increasing customer enthusiasm and positive evaluations of products or services and alleviating frustration and anxiety for perplexed customers Some salespeople may struggle with frustration and annoyance toward certain customers, but those skilled in managing emotion control their negative emotions and effect positive feelings that ultimately build customer rapport and create relationships based on goodwill

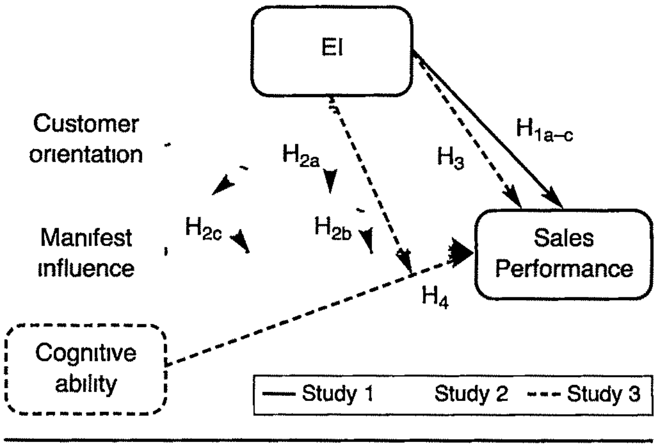
Conceptual Development

In the next sections, we show why an ability-based domain-specific assessment of EI (as opposed to a domain-general or self-report assessment) is necessary We predict the direct effects of EI on performance (i e , sales revenue and customer retention), emphasizing sales professionals' ability to think about and use emotions effectively We develop hypotheses that examine EI's moderation of the relationship to sales performance between two important marketing exchange variables customer orientation and manifest influence We conclude by examining the interplay between EI and cognitive ability and its performance effects Figure 1 shows our conceptual model

Need for an Ability-Based Domain-Specific EI Measure

Self-report versus ability-based measure We prefer an ability-based over a self-report measure of EI in marketing exchanges Self-report measures are often inadequate because people tend to report their abilities inaccurately (Paulhus, Lysy, and Yik 1998) Moreover, they tend to filter self-reports through their self-concepts and impression management motives (Mayer, Salovey, and Caruso 2000), which potentially encourages socially desirable responses Not surprisingly, the associations are rather low between ability models and self-report scales (r's ~ 22, Brackett et al 2006), indicating that these approaches yield different information about the same person (Brackett and Mayer 2003) Finally, extensive research has indicated that people are notoriously poor at reporting their emotions (Ehrlinger and Dunning 2003, Mabe and West 1982) and that self-reported EI inadequately assesses emotional skills (Brackett et al 2006) Thus, we develop the EI in marketing exchange (EIME) scale to assess emotional abilities that relate to performance in marketing exchanges more accurately (We use the term EIME only when referring to our scale, we use the term EI throughout when referring to the emotional intelligence construct)

FIGURE 1
Theoretical Model of EI in Marketing Exchanges



Specific versus general domains Specific domains represent refinements from general domains to evolve the understanding of the construct and to provide further problem-solving ability in specific areas Domain-general measures sacrifice specialization for generalization and often fail to overcome unique contextual distinctions within a domain (Bearden, Hardesty, and Rose 2001) For example, knowing which emotions are useful when interacting with customers involves more specialized emotional abilities than managing emotions in general This does not mean that people who are generally emotionally skilled cannot perform well specifically, rather, assessing specific emotional abilities likely enhances assessment of a unique domain Thus, we developed the EIME scale to identify unique emotional abilities that make people more effective in marketing exchanges Table 1 provides an overview of a widely used self-report EI scale (SREIS, Brackett et al 2006), a highly popular domain-general EI scale (MSCEIT, Mayer et al 2003), and the newly developed EIME scale We use each scale subsequently in our empirical work

The Influence of EI on Sales Performance

Mayer and Salovey (1997) suggest that people have unique levels of emotional knowledge underlying their emotional abilities, developed in childhood depending on parental support and formed continually throughout life by environmental circumstances For example, children of parents who suppress emotions or vent feelings poorly often misunderstand when and how to express emotions Subsequently, their emotional knowledge develops slowly and their understanding and use of emotional abilities is limited, leading to wide variations of adulthood EI

As a skilled orator stirs an audience, a person's ability to process and use emotional information can strongly affect interactions and interpersonal influence Homburg, Wieseke, and Bornemann (2009) suggest that empathetic understanding increases sales professionals' accuracy in meeting customer needs Unfortunately, scarce research has identified specific emotional abilities than can help understand and determine how to interpret emotions and use them in marketing exchanges to enhance performance (Palmatier et al 2009)

We suggest that certain people can recognize relevant emotions in marketing exchanges and use them to suit customers' needs These people alleviate negative emotions and enhance positive ones without repressing or exaggerating information they convey Similarly, sales professionals are likely to perform better if they can keep their emotions after a lost sale or poor presentation from spilling into subsequent customer interactions but instead integrate emotional information into sales presentations to persuade customers by appealing to current emotional states (Strutton and Pelton 1998) For example, if a customer is frustrated by complex product features, salespeople who can ease frustration will have a distinct advantage over others who

TABLE 1
Comparison of EI Scales

Product	MSCEIT	SREIS	EIME
Type of scale	Ability-based	Subjective self-report	Ability-based
Domain of scale	General	General	Specific
Number of dimensions	4	4	4
Number of items	141	19	15
Sample Items			
Perceiving	Indicate how much of each emotion is expressed by this picture/landscape	By looking at people's facial expressions, I recognize the emotions they are experiencing	Indicate how much "surprise" is expressed [in the picture to the left]
Facilitating	What mood(s) might be helpful to feel when meeting in-laws for the very first time?	When making decisions, I listen to my feelings to see if the decision feels right	How useful might it be to feel "guilt" when attempting to persuade someone to make an expensive purchase?
Understanding	Natalie had never been more surprised in her life But as she recovered a bit from the shock of the loss and realized she could gain some advantage from the situation if she planned carefully, she became____	I have the vocabulary to describe how most emotions progress from simple to complex feelings	A customer was interested and ready to make a purchase Later, he felt embarrassed and guilty What happened in between?
Managing	Debbie just came back from vacation She was feeling peaceful and content How well would each action preserve her mood? *Action* She started to make a list of things at home that she needed to do	I can handle stressful situations without getting too nervous	Bill is presenting the product well, although the couple is starting to look bored and disinterested How well would the following behavior help Bill keep their interest and close the sale? *Behavior* Bill should accept the fact that the couple probably won't make the purchase

fail to perceive, facilitate, understand, and manage these emotions Therefore, we expect the following

> H_1 EI in marketing exchanges (a) positively influences sales performance beyond the effects of (b) domain-general EI assessed with the MSCEIT and (c) self-reported EI assessed with the SREIS

The Influence of EI and Marketing Exchange Variables on Sales Performance

The previous section reveals how EI affects performance directly However, EI is also likely to affect exchange between buyers and sellers in more complex ways Next, we examine EI as a moderator, adding to the field's knowledge of the complex interchange between buyers and sellers and providing evidence for the importance of processing emotional information in such encounters We chose two marketing exchange variables because each taps crucial aspects of customer interactions (Bagozzi, Gopinath, and Nyer 1999) Customer orientation assesses commitment to meeting customers' needs, manifest influence assesses influence on customers

Customer orientation Customer orientation requires sales professionals to "engage in behaviors that increase customer satisfaction and avoid behaviors leading to customer dissatisfaction" (Dunlap, Dotson, and Chambers 1988, p 178) Salespeople with high EI are likely to exhibit behaviors consistent with customer orientation because they effectively perceive, use, understand, and manage emotions in marketing exchanges High-EI sales professionals are likely to assess customers' needs better, offer products that will satisfy them, describe products and services more effectively relative to the customer's current emotional state, and avoid high-pressure selling, which can result from poor social skills (Thomas, Soutar, and Ryan 2001) Ramani and Kumar (2008) suggest that a customer orientation reflects ability to use information obtained through successive interactions to achieve profitable customer relationships We suggest that high-EI salespeople perceive customers' emotions effectively, know which emotions are useful relative to customers' needs, understand how fear, anxiety, or frustration might make customers feel, and manage emotions toward finding joint solutions Therefore, we expect customer orientation to be more positively related to sales performance at higher levels of EI

Manifest influence Manifest influence refers to changes in customers' decisions and behaviors because of sales professionals' participation (Kohli and Zaltman 1988) Salespeople with greater manifest influence are likely to be superior performers (McFarland, Challagalla, and Shervani

2006) We expect that high-EI salespeople influence customers more effectively because they recognize and understand their needs and can help find the best solutions, which leads to positive outcomes for the firm, customer, and salesperson Without EI, interpersonal skills suffer, and attempts to influence may seem divisive and pushy We expect manifest influence to be more positively related to sales performance at higher EI levels

In addition to the two-way relationships, we anticipate that manifest influence will significantly affect sales performance when sales professionals are better able to employ a customer orientation, but only when they have higher levels of EI Low-EI salespeople may try to use customer orientation to influence customers' decisions, but their communication will be less effective because they cannot integrate emotional information For example, customers may interpret an inability to detect anxiety or frustration as signaling a lack of caring when the salesperson is merely less able to read emotions Furthermore, not knowing which emotions reduce tension, not understanding how anxiety and frustration can lead to anger, and not being able to help customers relax can cause salespeople to seem uncaring, disingenuous, or even manipulative Alternatively, higher levels of EI are likely to make a customer orientation seem more credible and sincere because the salesperson also incorporates customers' emotions Therefore, we expect customer orientation to moderate the relationship between manifest influence and sales performance, but only at higher levels of EI In summary, we predict the following

> H_2 EI in marketing exchanges moderates the relationships between (a) customer orientation and (b) manifest influence and moderates (c) the interaction of customer orientation with manifest influence on sales performance such that these relationships are more positive at higher levels of EI

The Influence of EI Beyond Cognitive Ability

Considerable attention has been paid to the impact of cognitive ability on sales performance (Churchill et al 1985, Sujan, Weitz, and Kumar 1994, Walker, Churchill, and Ford 1977, Weitz 1981, Weitz, Sujan, and Sujan 1986) For example, prior research has examined sales performance from an information processing perspective, in which the salesperson's amount of domain-specific knowledge of customers (Weitz 1978), products (Szymanski 1988), and competitors (Sujan, Sujan, and Bettman 1988) predicts sales performance Despite the prevalence of cognitive ability studies in the marketing literature, recent research suggests that emotional ability is as important, if not more so, than cognitive ability (e g , Schmidt and Hunter 2004) We suggest that EI can powerfully distinguish "those who truly understand emotions from those who get lost in them" (Mayer, Salovey, and Caruso 2000, p 413) For example, a sales professional who has high cognitive ability but low EI may be highly knowledgeable about product features but may not perceive that the customer is confused and thus may lose the sale Another salesperson might have less cognitive ability but higher EI and can recognize, understand, and respond effectively to the frustrated customer and thus close the deal

Salespeople who are better able to perceive, use, understand, and manage emotions are likely to be proficient sellers because they can go beyond the spoken or written word, read customers' emotions, know which emotions are appropriate in particular situations, understand how customers feel during and after purchases, and effectively manage emotions to effect positive outcomes for both customers and themselves In addition, high-EI salespeople are more likely to generate positive feelings toward customers and create relationships characterized by goodwill and understanding They are more likely to be viewed as nonmanipulative and genuine in their interpretation and understanding of customers' emotions, which should lay the groundwork for establishing and maintaining long-term customer relationships Therefore, we hypothesize the following

> H_3 EI in marketing exchanges positively influences sales performance beyond the effects of cognitive ability

The Influence of EI and Cognitive Ability on Sales Performance

We suggest that cognitive ability and EI make independent but complementary contributions to performance A complementary relationship suggests that these abilities are distinct but mutually supportive constructs and that their differences allow each to contribute to a unified outcome (Barbalet 2001) Such a view is consistent with recent research that examines the interaction between social competence and cognitive ability (Verbeke et al 2008) We suggest that EI interacts with cognitive ability such that cognitive ability has a positive direct effect on sales performance but that this relationship is likely to be strengthened at higher levels of EI

Sales professionals who have high cognitive ability are likely to find it easier to understand how their products work and how they can function in complex customer settings They are also likely to be better equipped to ask probing questions that uncover issues and challenges that customers face and to understand their situations Thus, cognitive ability is clearly beneficial However, we suggest that higher EI enhances cognitive ability to boost sales performance Specifically, those who have both cognitive ability and high EI can better discern whether they are conveying information that is resonating with customers, understand how basic customer emotions combine to form more complex emotions, and regulate their emotions and customers' emotions during marketing exchanges High-EI sales professionals understand subtle facial expressions of confused customers, which prompt them to repeat or clarify messages or find better ways to explain product or solution details Thus, salespeople with high cognitive ability can understand what the customer is telling them, and salespeople who also possess high EI can understand how the customer is conveying that information, why the customer is feeling and expressing certain emotions, and when to express or suppress their own emotions

Although salespeople with greater cognitive ability may have little difficulty understanding problems and providing reasoned solutions to customer problems, without at least moderate levels of EI they will be unable to read, understand, or use emotional information in the interaction. For example, they will struggle with recognizing whether customers are enthusiastic or frustrated and with understanding complex emotional information, such as distinguishing facial expressions. They will also misread the appropriateness or blending of various emotions and fail to discern how to regulate their own emotions or manage the customers' emotions. Thus, we expect a weak relationship between cognitive ability and sales performance when EI is low. In summary, we suggest that EI affects the likelihood of cognitive ability enhancing sales performance, such that when EI increases, cognitive ability is more strongly related to sales performance. Formally, we hypothesize the following:

> H_4: EI in marketing exchanges and cognitive ability interact such that the relationship between cognitive ability and sales performance is more positive at higher levels of EI.

Method

We conducted three field studies to test our hypotheses. Before providing details, we briefly summarize the development of our EI measure: EIME. Recall that we wanted to create an ability-based, domain-specific scale because none existed, and domain-general and self-reported EI measures have limitations, as discussed previously.

We took several steps to ensure the validity of the new EIME measure. To ensure content validity, we used several sources to develop an initial pool of items. First, we asked 108 upper-division business students and 45 MBA students to describe reactions to various marketing situations, such as poor customer service and rude salespeople. We provided participants definitions of the four EI dimensions and then used these statements to develop an initial set of items. We used the existing domain-general EI scale (MSCEIT) and self-report EI scales (e.g., SREIS) to guide our development of the EIME scale. This combination of sources resulted in an initial 130-item pool, which then underwent three purification procedures.

First, 14 sales professionals from an automobile dealership provided feedback regarding face validity, wording appropriateness, and accuracy of the contexts posed for all items. This resulted in 25 items being deleted, leaving 105 remaining items.

Second, consistent with the methodology used in scoring the MSCEIT, we asked 24 people with expertise in emotion studies to determine correct responses for items in the initial pool. Mayer and colleagues (2003) indicate that experts are more reliable judges of correct emotional responses than nonexpert consensus groups. Research has advocated using multiple expert judges ($N > 10$) to capture some degree of consensus (Mayer, Salovey, and Caruso 2003). When one or two experts are used alone, they tend to perform no better than consensus groups. Each expert in our sample had at least 4 years of graduate training in emotional expression and behavior, including specialized training in emotional research. Seven had more than 15 years of studying emotions and behavior. Each had at least 5 years of sales and/or sales management experience. We asked them to determine the best response for each item, and then we weighted each item according to the percentage of correct responses. For example, if 80% of the experts indicated that the correct response was "D," respondents choosing "D" received .80 toward their overall EIME score. We removed 30 items that a majority of our experts failed to agree on, leaving 75 items.

Third, we administered the remaining items to a sample of real estate agents. We sent letters inviting participation in our online survey to 250 agents randomly selected from an online listing service. One week later, we followed with an e-mail as a reminder, resulting in a usable sample of 110 agents, a 44% response rate. Participants who completed the survey received a $20 check. Using Armstrong and Overton's (1977) procedures, we found no evidence suggesting problems associated with nonresponse; EIME scores were similar for the first and last quartile of respondents ($M = 11.20$ versus $M = 11.68$, $t_{53} = -1.00$, $p > .05$). Furthermore, no evidence of nonresponse bias appeared in subsequent data collections.

We evaluated the remaining items for each lower-order dimension using principal axis factor analysis. Kaiser–Meyer–Olkin tests of sampling adequacy and Bartlett tests of sphericity indicated that the data were appropriate for factor analysis. In addition to evaluating the factor loadings, we assessed corrected item-to-total correlations. These comprehensive procedures yielded 15 items for the final EIME scale.

We assessed the theoretical model specifying a higher-order factor structure with four lower-order dimensions by performing confirmatory factor analysis on the variance–covariance matrix using AMOS 7.0 (Arbuckle 2006). Consistent with the theoretical model specifying a higher-order factor structure, the second-order model fit the data well ($\chi^2 = 93.41$, d.f. $= 86$, $p = .27$, comparative fit index $= .99$, and root mean square error of approximation $= .02$). The comparative fit index of .99 met the .90 cutoff Bentler (1992) recommends, and the root mean square error of approximation of .02 indicated a good fit (Byrne 1998). Further assessment of the higher-order solution indicated that all estimates were of the proper sign and significant (t-values ≥ 2).

When analyzing the reliability of scales with item format heterogeneity (i.e., scale items that differ systematically from other items within the same dimension), split-half reliabilities are appropriate and consistent with prior research for assessing both dimension and overall ability-level reliabilities (see Brackett and Mayer 2003; Mayer, Salovey, and Caruso 2002; Mayer et al. 2003; Nunnally and Bernstein 1994). Specifically, we used different item formats within the EI dimensions to tap a broader range of abilities to process emotional information. For example, the understanding dimension captures sales professionals' ability to understand what emotions are felt (item 8), how emotions change over time (items 9 and 10), and how emotions blend to form more complex emotions (item 11). Given differences in item format within dimensions and across dimensions, we used split-half reliabilities to estimate reliabilities for the overall and dimension-level EIME. The split-half reliability for the EIME scale was 86 The split-half reliabilities at the dimensional level were 76 for perceiving, 82 for facilitating, 71 for understanding, and 83 for managing Scores on the EIME ranged between 1 79 and 13 04 and averaged 10 00

Next, we describe three studies that test our hypotheses Specifically, Study 1 assesses salespeople's ability to perceive, use, understand, and manage emotions to influence sales revenue In Study 2, we assess EI's ability to enhance the impact of two important marketing exchange variables—customer orientation and manifest influence—on sales revenue Finally, Study 3 examines the complementary relationship between EI and cognitive ability on sales performance

Study 1

Sample and Survey Procedure

We conducted Study 1 (undertaken to assess H_{1a} and H_{1b}) across two stages First, we contacted 500 agents randomly selected from a major national real estate company To boost responses, we offered $20 for completing the survey We received 181 responses, a response rate of 36 2% Second, to reduce effects of common respondent bias, we conducted Stage 2 one week after Stage 1 All 181 agents were invited by mail to participate in a follow-up survey that included the 141-item MSCEIT to measure domain-general EI To boost the response rate, participants received an additional $20 Of these agents, 69 completed the MSCEIT used in our analyses, for a 38 1% response rate The EIME and MSCEIT showed discriminant validity because a two-factor correlated model fit significantly better than a one-factor model ($\Delta\chi^2 = 21\ 75$, d f = 1, $p < 01$)

Measures

EIME We used the previously described 15-item EIME measure to assess ability-based EI in marketing exchanges The split-half reliability of the EIME was 84

MSCEIT We assessed domain-general EI with the 141-item MSCEIT scale Mayer and colleagues (2003) developed The split-half reliability of the MSCEIT was 89

Sales revenue The company provided each agent's annual sales revenue We employed this single indicator to reflect proficiency in the sales role

Control variables We included age, gender, and years of sales experience as control variables The Appendix includes the Study 1 measures

Results

Table 2 displays the results We mean-centered measures before conducting the analyses In support of H_{1a}, EI, age, gender, and sales experience were regressed onto sales revenue, indicating a significant effect of EI (β = 28, $p < 05$) and explaining 15% of the variance in sales revenue

To test H_{1b}, we conducted hierarchical regression A second regression including EI, MSCEIT, age, gender, and sales experience revealed that only EI (β = 43, $p < 05$) significantly predicted sales revenue No significant change was evident in explained variance (F(1, 53) = 1 95, n s) when we included MSCEIT Although EI and MSCEIT were significantly correlated (r = 42, $p < 01$), multicollinearity was not significant (variance inflation factor < 10) These results support H_{1b}

TABLE 2
Study 1: EI and MSCEIT as Predictors of Sales Revenue (H_{1a} and H_{1b})

	Sales Revenue	
	M1	**M2**
EI	28*	43*
Experience	19	21
Age	– 15	– 16
Gender	– 06	– 10
MSCEIT	—	– 24
R^2	15	18
F (M1 versus M2)	F(1, 53) = 1 95	

*$p < 05$

To understand which dimensions of EI are specifically related to sales revenue, we adopted a structural equation modeling approach using partial least squares (PLS) analysis with Smart-PLS 2 0 (Ringle, Wende, and Will 2005) We used the variance-based PLS procedure because PLS is robust to small sample sizes and deviations from normality (Henseler, Ringle, and Sinkovics 2009) To test the hypothesized relationships, we used bootstrapping with 500 subsamples (Chin 1998) to generate t-values Table 3 shows these dimension-level results Dimension-level analyses revealed that understanding (β = 80,012 76, $p < 05$) and managing emotions (β = 49,183 71, $p < 05$) were positively related to sales revenue Understanding and managing emotions are essential to selling complex high-involvement products, particularly for real estate agents, who deal with transactions that take considerable time and effort An agent can greatly benefit from empathizing and understanding the emotions that accompany the complex process of buying a home If agents can lessen customers' fear and anxiety by using emotional management techniques such as consoling, they are likely to develop stronger customer relationships and ultimately increase sales

Study 1's results demonstrate that EI affects sales revenue However, it is also important to examine whether EI can enhance the performance relationships of two key marketing exchange variables customer orientation and manifest influence To this end, we conducted Study 2

Study 2

Sample and Survey Procedure

For Study 2, we contacted a random sample of 300 insurance agents located in the Northeast United States Using the same procedures employed in the first study, we received 107 usable responses, for a 36% response rate In this study, we examined the extent to which EI moderates the relationships (1) between customer orientation and sales revenue, (2) between manifest influence and sales revenue, and (3) among a three-way interaction of EI, customer orientation, and manifest influence on sales revenue

TABLE 3
Dimension-Level EI Results

	Dimensions of EI			
	Perceiving	Facilitating	Understanding	Managing
Study 1: Sales Revenue (Real Estate)				
EIME	06	50	2 55**	2 84**
	(460 51)	(9090 92)	(80,012 76)	(49,183 71)
MSCEIT	1 12	– 98	1 94*	– 24
	(15,669 56)	(–11,063 87)	(42,060 58)	(–1260 17)
Study 2: Sales Revenue (Insurance Agents)				
EIME	2 93**	3 22***	– 28	1 39
	(99,047 20)	(101,067 60)	(–9241 50)	(81,401 59)
Study 3 Sales Revenue (Insurance Agents)				
EIME	18	3 83***	84	2 10**
	(3515 86)	(95,951 86)	(9499 13)	(39,120 68)
SREIS	– 33	– 58	83	1 72*
	(–4206 52)	(–6341 44)	(9206 92)	(18,143 98)
Study 3 Retention (Insurance Agents)				
EIME	1 47	82	57	2 14**
	(1 56)	(1 42)	(1 32)	(4 14)
SREIS	– 35	46	1 12	1 37
	(– 81)	(1 20)	(1 51)	(1 78)

*$p < 10$
**$p < 05$
***$p < 01$
Notes t-values are provided, and unstandardized beta coefficients are in parentheses

Measures

EI in marketing exchanges We used the 15-item EIME Split-half reliability was 79

Sales revenue The participating firm for each salesperson supplied yearly sales revenue This served as the primary dependent variable in Study 2

Customer orientation We used Periatt, LeMay, and Chakrabarty's (2004) five-item scale The coefficient alpha was 88

Manifest influence We adapted Kohli and Zaltman's (1988) seven-item measure The coefficient alpha was 74

Control variables As in Study 1, we included age, gender, and sales experience as control variables We added two control variables related to sales performance—adaptive selling and self-efficacy—to test whether EIME affected performance beyond the variables We adapted Spiro and Weitz's (1990) nine items for adaptive selling and Sujan, Weitz, and Kumar's (1994) five-item self-efficacy scale The Appendix displays each scale used in Study 2

Results

Table 4 shows correlations and descriptive statistics for variables used in Study 2 In $H_{2a\text{–}c}$, we predicted that EI would interact with customer orientation, manifest influence, and both customer orientation and manifest influence such that its impact on sales revenue would be more positive at higher levels of EI To test these hypotheses, we ran

TABLE 4
Study 2: Correlation Matrix and Summary Statistics

Measure	1	2	3	4	5	6	7	8	9
EI	(79)								
Customer orientation	17	(88)							
Manifest influence	05	32**	(74)						
Self-efficacy	07	38**	19	(79)					
Adaptive selling	– 16	13	09	30**	(72)				
Experience	20*	20*	17	31**	– 08	—			
Age	29**	19	07	28**	– 09	59**	—		
Gender	– 11	– 01	01	04	– 09	08	02	—	
Sales revenue	30**	30**	39**	30**	16	25*	25**	– 03	—
M	10 78	4 66	3 65	4 53	3 75	16 52	47 41	1 34	648^a
SD	1 64	46	76	46	53	12 24	11 00	48	94^a

*$p < 05$
**$p < 01$
^{a}Values are in thousands
Notes Reliabilities are shown on the diagonal of the matrix

a regression with sales revenue as the dependent variable and customer orientation, manifest influence, EI, the three two-way interactions, and the three-way interaction along with age, gender, sales experience, self-efficacy, and adaptive selling as control variables Table 5 displays the results The overall regression was significant (F(1, 290) = 6 09, $p <$ 01) The results revealed a significant main effect for EI (β = 27, $p <$ 01), manifest influence (β = 22, $p <$ 05), adaptive selling (β = 16, $p <$ 10), the interactions between customer orientation and EI (β = 37, $p <$ 01), the interactions between manifest influence and EI (β = 17, $p <$ 10), and a three-way interaction among customer orientation, manifest influence, and EI (β = 39, $p <$ 01) These results support H_{2a-c} and suggest that as EI increases, the positive relationship is enhanced between an insurance agent's customer orientation and manifest influence on sales

To understand these interactions, we conducted simple effects analyses (i e , the slopes at one standard deviation above and below the mean for the moderator variable EI) (Aiken and West 1991) to verify that the interaction supported our prediction The results reveal that moderate (β = 14,540 25, $p <$ 05) and high levels (β = 76,470 84, $p <$ 01) of EI are necessary to enhance the impact of customer orientation on performance Similarly, moderate (β = 13,192 21, $p <$ 10) and high levels (β = 64,947 33, $p <$ 01) of EI are necessary to enhance the impact of manifest influence on performance Moreover, the greatest effect of manifest influence on performance occurs when both EI and customer orientation are high (β = 71,646 74, $p <$ 01) For the simple effects tables, see the "Additional Analyses" section in the Web Appendix (http //www marketingpower com/jmjan11)

Though not formally hypothesized, we tested whether EI intervenes as a variable between customer orientation and sales performance Specifically, does EI act as mediator through which customer orientation influences sales performance? Our findings revealed that customer orientation was positively related to sales revenue (β = 19, $p <$ 10), when we included EI as the mediator, customer orientation no longer related to sales revenue (β = 15, $p >$ 10) These results support EI's mediating role on the customer orientation–performance relationship

As Table 3 displays, dimension-level analyses using PLS revealed that perceiving (β = 99,047 20, $p <$ 05) and facilitating (β = 101,067 60, $p <$ 01) emotion were positively related to sales revenue For insurance agents, the abilities to perceive, assimilate, and use emotions to decipher how to meet customers' needs best may be particularly effective Specifically, emotionally perceptive agents attend to facial expressions, recognize when and whether emotions resonate, and effectively discern the best services For example, it is useful to know that customers may feel fear and anxiety when they consider purchasing insurance but joy and relaxation when offered services that alleviate risks Integrating and using perceptual information for effective communication and positive interaction is vital to creating interactions based on goodwill and positive emotions

Studies 1 and 2 provide evidence for the importance of EI and its moderating impact on marketing exchange variables, but we needed further examination of how EI and cognitive ability interact to create a complementary relationship to sales performance Furthermore, we needed further examination of whether EI affects performance beyond self-report EI and whether EI can be extended to predict customer retention, which can be vital Research suggests that a 1% improvement in retention can improve firm value by 5% (Gupta, Lehmann, and Ames 2004)

TABLE 5
Study 2: EI as a Moderator of Customer Orientation and Manifest Influence (H_{2a}, H_{2b}, and H_{2c})

	Sales Revenue
EI	27***
Customer orientation (CO)	08
Manifest influence (MI)	22**
EI × CO	37***
EI × MI	17*
CO × MI	08
EI × CO × MI	39***
Self-efficacy	09
Adaptive selling	16*
Experience	– 04
Age	15
Gender	09
R^2	45
F-value	F(12, 90) = 6 09***

*$p <$ 10
**$p <$ 05
***$p <$ 01

Study 3

Sample and Survey Procedure

In Study 3, we randomly selected 300 insurance agents located in three northeastern states Using the Study 2 procedures, we received 88 usable responses, for a 29% response rate To reduce the potential for order effects, we included the EIME scale at the beginning of the survey for half the participants and at the end for the other half

Measures

EI in marketing exchanges Again, we employed the 15-item EIME The split-half reliability was 81

Sales revenue and customer retention The participating firm for each salesperson supplied annual sales results, giving us an independent performance measure To measure customer retention, agents provided the percentage of customers they had retained in the past 12 months

Cognitive ability We objectively assessed the agents' cognitive knowledge (i e , objectively defined right or wrong responses) about selling and their specific understanding of procedures and techniques they were trained to use We conducted personal interviews with six insurance agents in the same general specialty field to determine the appropriate level of sales knowledge that insurance agents in our sample should have acquired We carefully developed items to provide moderately difficult items that salespeople with higher cognitive ability would be likely to answer correctly Correct answers were determined through the company Web site and verified through personal interviews with agents not involved with the study We used eight items to measure objective cognitive ability (α coefficient = 89)

Self-report EI We used the leading 19-item self-report EI scale (SREIS, Brackett et al 2006, α = 77) The EIME and SREIS showed discriminant validity because the two-factor correlated model fit significantly better than the one-factor model ($\Delta\chi^2 = 51\ 67$, d f = 1, $p <$ 01)

Control variables We included sales experience, adaptive selling (α = 88), and self-efficacy (α = 97) as control variables We added sales role (i e , whether the sales professional was a junior or a senior sales representative) to control for the size of sales territory as an alternative explanation of higher sales revenue Controlling for the sales role provides evidence that EI influenced sales revenue despite the size of the sales territory or differences between junior and senior salespeople The Appendix reports each measure used in Study 3

Results

Order effects We examined a potential alternative explanation (e g , testing effects) to allay concerns that the order of the EIME might artificially affect our findings Thus, we counterbalanced the EIME No order effects were evidenced when the EIME appeared at the beginning versus the end of the survey relative to the two performance measures—customer retention and sales revenue Table 6 contains a correlation matrix for all variables

Sales revenue and customer retention We mean-centered the measures before conducting the analyses Table 7 displays the hierarchical regression results The initial regression, including self-report EI, cognitive ability, EIME, self-efficacy, adaptive selling, sales experience, and sales role (Model 1) explained 15% of the variance in customer retention and 17% of the variance in sales revenue Multicollinearity showed little effect between the independent variables (variance inflation factors < 10) The results revealed that EIME significantly predicted both customer retention (β = 30, $p <$ 05) and sales revenue (β = 35, $p <$ 05) beyond self-report EI, cognitive ability, self-efficacy, adaptive selling, sales experience, and sales role These findings support H_{1c} and H_3

TABLE 6
Study 3: Correlation Matrix and Summary Statistics

Measure	1	2	3	4	5	6	7	8	9
EI	(81)								
Cognitive ability	29**	(89)							
Self-efficacy	14	00	(97)						
Adaptive selling	22	08	06	(88)					
SREIS (self-report EI)	46**	25*	26*	51**	(77)				
Experience	20	11	16	− 06	− 07	—			
Sales role	09	05	10	− 17	− 03	25*	—		
Sales revenue	31**	13	08	14	20	14	− 05	—	
Customer retention	29**	33**	− 04	14	12	12	− 02	20	—
M	9 71	3 72	4 30	3 63	3 39	15 15	1 25	115a	83%
SD	2 54	3 02	1 02	76	42	9 39	44	169a	10%

*$p <$ 05
**$p <$ 01
aValues are in thousands
Notes Reliabilities are shown on the diagonal of the matrix

TABLE 7
Study 3: EI and Cognitive Ability on Customer Retention and Sales Revenue (H_3 and H_4)

	Sales Performance			
	(Customer Retention)		(Sales Revenue)	
	M1	M2	M1	M2
Cognitive ability (CA)	19*	12	07	01
Self-report EI	− 14	− 02	− 02	08
EI	30**	33**	35**	38***
EI x CA	—	32**	—	27*
Self-efficacy	− 05	01	02	07
Adaptive selling	16*	18*	07	08
Experience	04	00	07	03
Sales role	04	02	09	07
R2	15	22	17	22
F(M1 versus M2)	F(1, 56) = 5 15**		F(1, 56) = 3 75*	

*$p <$ 10
**$p <$ 05
***$p <$ 01
Notes M1 items listed are standardized beta coefficients

A second regression (Model 2) including variables from Model 1 and the interaction between EI and cognitive ability explained an additional 7% of the variance in customer retention ($F(1, 56) = 5.15$, $p < .05$) and an additional 5% of the variance in sales revenue ($F(1, 56) = 3.75$, $p < .10$). The results suggest that the interaction between EI and cognitive ability is significantly related to customer retention ($\beta = .32$, $p < .05$) and sales revenue ($\beta = .27$, $p < .10$). To understand the nature of these interactions, we conducted simple effects analyses to verify that the interaction supported our prediction (Aiken and West 1991). As we expected, the results reveal that the relationship between cognitive ability and customer retention was more positive at moderate ($\beta = 2.26$, $p < .01$) and high ($\beta = 3.15$, $p < .01$) levels of EI. Similarly, the relationship between cognitive ability and sales revenue was more positive at moderate ($\beta = 49{,}568.13$, $p < .01$) and high ($\beta = 62{,}359.56$, $p < .01$) levels of EI. At low levels of EI, cognitive ability was not significantly related to customer retention or sales revenue. These findings are consistent with H_4. For the simple effects tables, see the "Additional Analyses" section in the Web Appendix (http://www.marketingpower.com/jmjan11).

Dimension-level analyses (see Table 3), again using a PLS structural equation modeling approach, revealed that facilitating ($\beta = 95{,}951.86$, $p < .01$) and managing ($\beta = 39{,}120.68$, $p < .05$) emotion were positively related to sales revenue. As we discussed previously, the ability to use emotional information is critical for insurance agents because of the emotion-laden nature of the process. Knowing which emotions are associated with different risks can be vital to providing products and services that meet customer needs. Similarly, alleviating customers' fears and anxiety through consoling and other emotional management techniques is likely to increase sales.

Furthermore, managing emotion ($\beta = 4.14$, $p < .05$) was positively related to customer retention. Strong negative emotions lurk in insurance sales because of the anxiety, frustration, and even fear associated with financial risk and coverage—emotions that customers feel even before encountering the salesperson. Considering the potential for negativity and volatility, salespeople are distinctly advantaged if they can regulate emotions in purchase decisions, the self, and others. Reducing reluctant customers' frustration and elevating or maintaining their joy can help build relationships and ultimately lead to more satisfied and loyal customers.

Overall, the results from Study 3 suggest that EI increases revenue and retention beyond cognitive ability and self-reported EI. In addition, cognitive ability and EI are complementary in that the greatest impact of cognitive ability occurs at moderate and high levels of EI.

Discussion

Theoretical Implications

Although researchers continue to pose questions regarding the role of emotion in exchange relationships and the use of emotion to influence customers (Bagozzi, Gopinath, and Nyer 1999; Gustafsson, Johnson, and Roos 2005), these questions have remained largely unanswered. In the current research, we identify a variable that the marketing literature has overlooked or misunderstood. Emotional intelligence provides an important key for understanding how sales professionals interact with customers in ways that not only facilitate the interactions but also lead to positive outcomes for the firm, customer, and salesperson. Although much excitement has been generated about the purported benefits of EI (Goleman 1995), conspicuous shortcomings have limited its theoretical development. We have attempted in five ways to overcome these shortcomings and advance the literature on emotion and EI in marketing exchanges.

First, prior domain-general EI findings have been equivocal (e.g., Zeidner, Matthews, and Roberts 2004). On the basis of current research, these prior findings are somewhat expected given that domain-general assessments have limited capacity to predict in specific domains such as marketing exchanges. Indeed, our results show a rather modest correlation between the domain-specific EIME and the domain-general MSCEIT and greater predictive validity of the EIME, providing further support that a domain-specific assessment is necessary.

Second, we show that EI can have important contingency effects in marketing exchanges beyond directly affecting performance. Our findings indicate that being able to attend to customers' needs (customer orientation) and influence them (manifest influence) are more positively related to performance when people possess high EI. In addition, we find that EI mediates the relationship between customer orientation and sales performance, suggesting that sales professionals' emotional abilities are essential if they are to effectively employ strategies and techniques for interacting with customers. Therefore, although it is important to train sales professionals to use a customer orientation, they will be able to employ such techniques most effectively if they possess EI. Thus, EI is an important antecedent to sales performance and essential to successful selling behaviors.

Third, we provide theoretical insights into the relationships among EI, cognitive ability, and performance, and we explain and demonstrate how EI and cognitive ability interact to affect performance. Thus, we provide new insights into the interplay between EI and cognitive ability and extend recent research that examines "intelligences" other than general cognitive, such as social competence (Verbeke et al. 2008).

Fourth, we advance the literature by developing an ability-based EIME measure, which starkly contrasts with published EI scales based on subjective self-reports (SREIS; Brackett et al. 2006). As we discussed, self-report scales are susceptible to faking (Day and Carroll 2008) and invalid for assessing ability (Mayer, Roberts, and Barsade 2008). Thus, the current research should advance further research assessing and testing EI in marketing exchanges.

Fifth, we uncover underlying dimensions of EI that uniquely influence sales performance in different contexts. The ability to understand and manage emotions seems particularly useful in real estate contexts. Such contexts often involve multiple visits to numerous homes with demanding customers. Agents who can keep their composure (i.e., manage their emotions) and recognize that an anxious client may become frustrated (i.e., understand the client's emotions) are likely to perform more effectively. In insurance contexts, the evidence indicates that perceiving, facilitating, and managing emotions are effective. Such contexts typically involve fewer interactions with clients. This suggests that the ability to recognize and use emotions quickly should be particularly useful. For example, being able to read facial expressions (i.e., perceiving) and knowing which emotions to portray to clients (i.e., facilitating) are likely to be particularly effective in such contexts.

Managerial Implications

Customer relationship management. This research provides evidence that high-EI sales professionals, compared with moderate- and low-EI salespeople, influence sales revenue and retain more customers, a finding that has potential implications for maintaining customer relationships over time. High-EI salespeople are more likely to perceive how the customer feels in various situations, know which emotions are useful in various settings, understand how basic emotions might evolve given a customers' current emotional state, and manage emotions to reduce frustration and anxiety or elevate moods through positive emotion. Thus, EI can be important to effective customer relationship management and can substantially affect the firm's bottom line.

Adding to the direct effects of EI on performance, our findings indicate that high-EI sales professionals significantly influence the effectiveness of key marketing exchange variables. The marketing literature has emphasized the importance of influencing customers' decision making to find optimal solutions (manifest influence) and the importance of meeting customers' needs (customer orientation). We found one variable in particular that accentuates sales performance relationships—high EI—even when we controlled for several variables, including adaptive selling and self-efficacy. Furthermore, a three-way interaction demonstrated that higher EI influences the effectiveness of selling techniques. Note that simple effects analyses of the three-way interaction indicated that the combination of low EI and high customer orientation was negatively related to sales revenue. This suggests that without EI, sales professionals trying to use a customer orientation may not recognize which emotions will reduce tension, fail to understand how negative emotions will lead to anger and frustration, and be unable to manage customers' emotions by helping them relax. In their failure, they might seem to be uncaring, disingenuous, or even manipulative. Thus, higher EI can significantly improve the use of selling techniques. These relationships represent an extension of how emotions influence customer relationships and suggest that salespeople who have control over and knowledge of their own emotions and the emotions of their customers will not only perform more effectively but also more proficiently employ strategies designed to create and maintain strong positive customer relationships.

Selection. Sales managers must select highly talented candidates from applicant pools, knowing that sales force turnover affects recruiting and selection costs (Darmon 1990). Many selection procedures test cognitive ability and could easily include an EI assessment. Hunter and Schmidt's (1998) meta-analytic assessment of selection procedures suggests that firms should enhance job performance by combining cognitive tests with assessments such as integrity measurements. However, until now, no useful assessment tools have been available to determine an applicant's ability to use emotions when interacting with customers. Furthermore, selecting people with high EI can have other outcomes critical to performance, such as better communication among coworkers, teammates, and supervisors, facilitation of positive work climates, enhanced citizenship behavior, reduced role conflict, and less turnover (Verbeke 1997).

Training. People can learn EI (Mayer and Salovey 1997); therefore, such training could help sales professionals improve their performance (Kumar, Venkatesan, and Reinartz 2008). Companies might assess EI to discern which dimensions are lacking and then focus training on overcoming EI weaknesses. For example, sales professionals scoring low on managing EI can be taught to manage their own and customers' emotions more effectively. Our findings suggest that those with at least moderate levels of cognitive ability may be the best candidates for focused EI training because these people may have the most to gain. Those with low cognitive ability do not seem to benefit from training for greater EI.

Limitations and Directions for Further Research

Limitations. The first limitation of this research is that we restricted it to evaluating the performance of real estate and insurance agents. In the future, researchers should evaluate EI in other marketing exchange contexts, such as complex customer-solution sales, product sales, and service-oriented businesses. A second potential limitation is that we restricted our scoring system to item responses on which 50% of our expert judges agreed, which could produce some range restriction (Schmidt, Shaffer, and Oh 2008) because experts vary in their knowledge of emotional information. Nevertheless, use of multiple experts (N = 24) is likely to alleviate much of this concern. Third, although sales revenue can be consistently measured across multiple contexts, agents with higher EI could have larger territories; similarly, insurance agents with higher EI might interact with more lucrative clients. We added several controls, such as sales experience and sales roles, to alleviate this limitation. Finally, we focused on moderated relationships between EI and two focal marketing exchange variables, but other moderated relationships may exist between EI and the control variables. Although our data (not reported in this article) suggest nonsignificant relationships between EI and adaptive selling and EI and self-efficacy, other contexts or outcomes may reveal more insights about EI's relationship to these and other marketing exchange variables. Next, we discuss potential areas for further research.

Emotional confidence and calibration Although emotional ability is critical, salespeople may further enhance performance by having confidence in their use of emotion, beyond the effects of EI (Alba and Hutchinson 2000) Confidence may increase motivational effects in which sales professionals interact with buyers in ways that are consistent with their beliefs about their emotional knowledge and ability (Chitturi, Raghunathan, and Mahajan 2007, Moorman et al 2004) However, research suggests that people are "wrong too often when they are certain that they are right" (Fischhoff, Slovic, and Lichtenstein 1977, p 561) Thus, the concept of emotional calibration, referring to the correspondence between what people know and what they think they know about emotions, may provide insights into emotions and marketing exchanges

Dimensions of EI In this research, we explore the four underlying EI dimensions as they relate to performance We found that each dimension influenced various aspects of marketing exchanges, though additional research is needed to understand fully how these dimensions influence and interact with additional constructs For example, how might dimensions of EI predict dimensions of adaptive selling? Though not reported, our data indicate that the managing dimension was correlated with both the behavior ($r = 24$, $p < 05$) and the belief ($r = 38$, $p < 01$) dimensions of adaptive selling (see Marks, Vorhies, and Badovick 1996) The ability to manage others' emotions may be particularly useful when employing aspects of adaptive selling Further research should explore these relationships in greater detail

EI beyond social skills Researchers have begun to examine the importance of social skills (Cross and Sproull 2004) in improving customer interactions The socially skilled sales professional helps customers solve, reframe, and understand their needs (Wierenga and Van Bruggen 1997, Wotruba 1991) For example, Verbeke and colleagues (2008) indicate that cognitive ability influences performance when social skills (i e , social competence) are high We encourage researchers to assess the role of social skills along with EI and cognitive ability

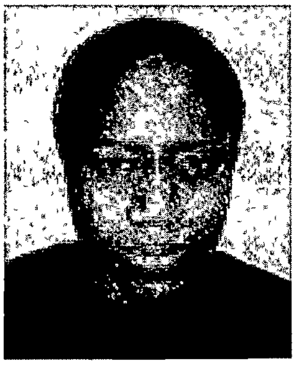
We hope that this research will encourage researchers to understand better the influence of emotion in marketing exchanges Understanding the role of EI could lead to a variety of favorable outcomes, including a richer knowledge of how sales professionals think and feel when they interact with customers, employees, and supervisors, as well as enhance customers' buying experiences

APPENDIX
Measures

EI in marketing exchanges Split-half reliabilities were 84, 79, and 81 across the three field studies Expert scores are provided in parentheses

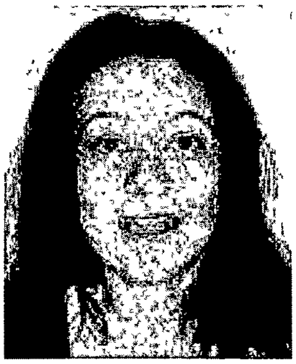
Section A

In this section, we are interested in emotions expressed in facial expressions and pictures Please circle the answer that corresponds to the emotion(s) expressed in each face or picture



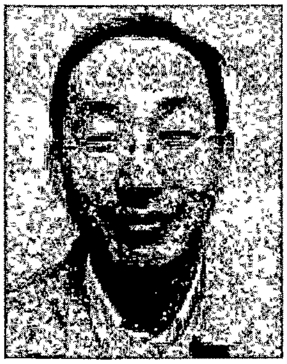
1 Indicate how much "sadness" is expressed in the picture to the left

1 Not at all present (89)
2 Slightly present (11)
3 Moderately present (00)
4 Quite present (00)
5 Extremely present (00)



2 Indicate how much "surprise" is expressed in the picture to the left

1 Not at all present (00)
2 Slightly present (00)
3 Moderately present (10)
4 Quite present (73)
5 Extremely present (17)



3 Indicate how much "fear" is expressed in the picture to the left

1 Not at all present (76)
2 Slightly present (24)
3 Moderately present (00)
4 Quite present (00)
5 Extremely present (00)

APPENDIX
Continued

Section B

In this section, we would like you to indicate how useful each emotion might be in response to the scenario that is presented How useful might it be to (check column that applies for each question)

	Not at All Useful	Slightly Useful	Moderately Useful	Quite Useful	Extremely Useful
4 Feel "hostility" when interacting with an angry supervisor?	(92)	(04)	(04)	(00)	(00)
5 Feel "anxiety" when determining the needs of a customer?	(68)	(28)	(04)	(00)	(00)
6 Feel "guilt" when attempting to persuade someone to make an expensive purchase?	(82)	(14)	(04)	(00)	(00)
7 Feel "frustration" when negotiating compensation issues with your supervisor?	(70)	(21)	(09)	(00)	(00)

Section C

In this section, we would like you to circle the emotional response that is the most likely to be felt in the situations described below

8 Matthew works best when his supervisor lets him do things the way he believes is best When his supervisor began to micromanage his activities, Matthew felt_____
  1 pleased (00)
  2 disappointed (00)
  3 relaxed (00)
  4 frustrated (92)
  5 guilty (08)

9 A man went into an electronics store feeling rested Later, he felt anxious What happened in between?
  1 He was approached by an aggressive salesperson (78)
  2 He saw an old friend that he hadn't seen in several years (00)
  3 He was helped by a cashier whom he thought he recognized (00)
  4 He found an alternative product that he liked almost as well (04)
  5 He couldn't find the brand of cell phone he wanted (18)

10 A customer was interested and ready to make a purchase Later, he felt embarrassed What happened in between?
  1 The customer received a brief phone call (00)
  2 The customer realized he could not afford to make the purchase (88)
  3 The customer realized that he should compare prices before making the purchase (00)
  4 The customer said that he/she was not interested in making the purchase (12)
  5 The customer continued to search for more information about the product (00)

11 Happiness is a combination of which group of three emotions listed below
  1 Envy, joy, pride (00)
  2 Pleasure, activeness, arousal (10)
  3 Joy, pleasure, satisfaction (82)
  4 Satisfaction, joy, excitement (08)

Section D

In this section, we would like you to indicate how effective each action might be in response to the scenario that is presented

Bill never received clear instructions about how to do his job One day he found out he was reassigned to a supervisor who had a reputation for setting clear goals and objectives Bill felt relieved and calm for the first time in a long while How well would the following behaviors help Bill maintain his feelings?

12 Behavior He could tell his new supervisor how much he didn't like the previous supervisor
  1 Not at all effective (79)
  2 Slightly effective (17)
  3 Moderately effective (04)
  4 Quite effective (00)
  5 Extremely effective (00)

A customer agreed to make a large purchase from you Later, however, you found out that the customer never had enough money to make the purchase How well would the following behavior help you reduce your disappointment?

13 Behavior Call back the customer and criticize him for wasting your time
  1 Not at all effective (90)
  2 Slightly effective (10)
  3 Moderately effective (00)
  4 Quite effective (00)
  5 Extremely effective (00)

APPENDIX
Continued

Section D, Continued

14 Behavior Teach the customer a lesson by not returning any of his phone calls
   1 Not at all effective (91)
   2 Slightly effective (09)
   3 Moderately effective (00)
   4 Quite effective (00)
   5 Extremely effective (00)

A couple has shown some interest in a product that Bill is selling Bill is presenting the product well, although the couple is starting to look bored and disinterested How well would the following behavior help Bill keep their interest and close the sale?

15 Behavior Bill should accept the fact that the couple probably won't make the purchase
   1 Not at all effective (70)
   2 Slightly effective (26)
   3 Moderately effective (04)
   4 Quite effective (00)
   5 Extremely effective (00)

Study 1· Additional Measures

MSCEIT A 141-item scale developed by Mayer and colleagues (2003) The split-half reliability was 89

Sales performance (sales revenue) The amount of annual revenue for each salesperson was provided by the real estate company

Study 2: Additional Measures

Sales revenue The amount of annual revenue for each salesperson was provided by the insurance company

Customer orientation Five-item scale anchored by 1 = "strongly disagree" and 7 = "strongly agree," developed by Periatt, LeMay, and Chakrabarty (2004) The coefficient alpha was 88

1 I try to figure out what customer needs are
2 A good employee has to have the customer's best interest in mind
3 I try to bring a customer with a problem together with a product/service that helps solve that problem
4 I offer the product/service that is best suited to the customer's problem
5 I try to find out what kind of products/services will be most helpful to a customer

Manifest influence Seven-item scale anchored by 1= "very little," and 7= "a great deal," adapted from Kohli and Zaltman (1988) The coefficient alpha was 74

1 How much weight did the customer give your opinions before buying?
2 To what extent did your involvement influence the customer's choices?
3 How much impact did you have on the customer's purchase decisions?
4 To what extent did the customer go along with your suggestions?
5 How much weight did the customer give your statements in making his or her purchase decisions?
6 To what extent did the customer's decisions reflect your influence?
7 To what extent did you influence the criteria used for making purchase decisions?

Self-efficacy Five-item scale anchored by 1 = "strongly disagree" and 7 = "strongly agree," adapted from Sujan, Weitz, and Kumar (1994) The coefficient alpha was 79 in Study 2 and 97 in Study 3

1 I know the right thing to do in selling situations
2 Overall, I am confident of my ability to perform my job well
3 I feel I am very capable at the task of selling
4 I feel I have the capabilities to successfully perform my job
5 I am good at selling

Adaptive selling Nine-item scale anchored by 1 = "strongly disagree" and 7 = "strongly agree," developed by Spiro and Weitz (1990) The coefficient alpha was 72 in Study 2 and 88 in Study 3

1 When I feel that my sales approach is not working, I can easily change to another
2 I like to experiment with different sales approaches
3 I can easily use a wide variety of selling approaches
4 I find it difficult to adapt my presentation style to certain buyers (reverse scored)
5 I vary my sales styles from situation to situation
6 I feel confident that I can effectively change my planned presentation when necessary
7 Basically, I use different approaches with most customers
8 I am very flexible in the sales approach I use
9 I try to understand how one customer differs from another

APPENDIX
Continued

Study 3: Additional Measures

Customer retention rate. Agent provided an estimate of the percentage of customers retained.

SREIS. 19-item scale anchored by 1 = "very inaccurate" and 5 = "very accurate," developed by Brackett and colleagues (2006). The coefficient alpha was .77. See the "Additional Measures" section in the Web Appendix (http://www.marketingpower.com/jmjan11).

Cognitive ability. An eight-item scale was developed. Correct answers are in boldface. The coefficient alpha was .89. Respondent frequencies are provided in parentheses.

1. How can individuals manage their credit information file to achieve a better credit rating?
   a. Change their name so as to restart their credit record. (.05)
   b. Cancel all of their credit cards and convert to a cash basis purchase behavior. (.15)
   c. **There are no "quick fixes," a good credit rating must be built over time.** (.50)
   d. Marry another person resulting in a merging of a poor credit score with a better score. (.30)
2. Individuals may request a credit report from a credit rating bureau:
   a. **Once each year for a small fee.** (.12)
   b. Once each year for free, with additional requests requiring a small fee. (.62)
   c. Multiple requests per year for free. (.04)
   d. First request is free, with an increasing cost scale for additional reports during the same year. (.22)
3. Who is covered by the liability portion of a homeowner's policy?
   a. Homeowner. (.00)
   b. Household members other than the homeowner. (.00)
   c. **Neighbors or other visitors.** (.97)
   d. Household pet. (.03)
4. Will an excellent credit rating be affected by an inquiry from (*respondent's firm*) into my credit history?
   a. **There is no effect on an individual's credit rating from insurance company inquiries.** (.54)
   b. Insurance company inquiries are accumulated by the credit rating agency and may exert a cumulative effect on the individual's credit rating. (.06)
   c. Insurance company inquiries only affect an individual's credit rating if they have a past history of collection difficulties. (.40)
   d. These inquiries are maintained by the credit rating agency in a hidden "blind" file that is not visible to the consumer. (.00)
5. How can an individual receive a copy of their credit report?
   a. By requesting the IRS to provide authorization for the release of the credit report. www.irs.gov/creditauthorization/ (.09)
   b. By requesting a copy from the Trans Union bureau. www.transunion.com/ (.77)
   c. By paying a fee to the Experian Corporation and thereby obtaining a credit report release authorization code that can be used at Equifax to receive the actual credit report. www.experianfax.com/ (.04)
   d. By requesting a credit report from the Selective Service Administration. www.ssa.gov/ (.10)
6. Are any items in a home not covered by (respondent's firm) homeowner's policy?
   a. Dangerous items such as firearms and knives. (.12)
   b. **Pet related damage.** (.57)
   c. Household appliances. (.18)
   d. Trailers. (.13)
7. What coverage do I have for damage from vandalism or malicious mischief?
   a. You are covered up to your policy limits unless your house was rented for a period exceeding six months. (.04)
   b. **You are covered up to your policy limits unless your house was vacant for 30 or more consecutive days preceding the incident. (.78)**
   c. The coverage is determined by state limits unless the house has been occupied for more than one year. (.00)
   d. The coverage is determined by the frequency of claims made for malicious mischief. (.18)
8. Am I covered if a windstorm damages trees in my yard?
   a. **Coverage is not provided to replace the trees damaged by a windstorm.** (.65)
   b. Coverage is provided to replace the trees only if a covered structure on the property is undamaged. (.02)
   c. Coverage is not provided to replace the trees only if a covered structure on the property is damaged. (.08)
   d. Coverage is provided to replace the trees. (.25)

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Rebecca J. Slotegraaf & Kwaku Atuahene-Gima

Product Development Team Stability and New Product Advantage: The Role of Decision-Making Processes

Innovation scholars have long touted the value of cross-functional teams, and though firms have embraced a cross-functional design in their new product development (NPD) teams, these teams continue to face challenges Stability in an NPD team may offer important advantages for decision making, however, its effectiveness as a structural coordination mechanism remains largely unexplored Therefore, to offer insight into the value of NPD team stability, the authors develop a process-based model that examines the extent to which stability influences certain decision-making processes, which in turn influence new product advantage They examine these relationships with a sample of cross-functional NPD project teams from 208 high-technology firms The results reveal that the degree of stability in an NPD project team has a curvilinear relationship to team-level debate and decision-making comprehensiveness In turn, whereas debate is positively related to decision comprehensiveness, decision comprehensiveness is positively related to new product advantage only at high levels These curvilinear patterns shed light on anecdotal evidence that currently attributes success to both stable and unstable project teams

Keywords new product development, teams, stability, decision making

Firms dedicate vast resources in their quest to develop new products that offer an advantage over competition At the heart of this quest is the knowledge embedded in the cross-functional new product development (NPD) team The team represents a group of people from different functions who are responsible for the management and coordination of the NPD project (Griffin and Hauser 1992) The rationale for using a cross-functional NPD team is to leverage each member's distinct expertise and knowledge Transferring knowledge across functional boundaries can generate a valuable strategic asset (Hansen 1999, Maltz and Kohli 1996) as teams create new solutions, products, and services (Atuahene-Gima and Evangelista 2000, Brown and Eisenhardt 1995, Griffin and Hauser 1992) However, the disparate knowledge and perspectives that exist across functions also have the potential to adversely affect cross-functional deliberations and decision making (Dougherty 1992)

To overcome this potential downside of cross-functional teams, firms can adopt an integration mechanism to elevate the team's information sharing and collaboration One often-used approach is a structural coordination mechanism that focuses on the stability of project team members In an NPD context, project team stability refers to the extent to which the core members of a cross-functional team remain for the duration of the project, from project approval to product launch From a knowledge-based perspective, stability stimulates collaboration (Pelled, Eisenhardt, and Xin 1999), thus enabling a cross-functional NPD team to dismantle the knowledge barriers that hinder innovation success (Carlile 2002, Dougherty 1992) However, stability may also pose specific risks For example, greater stability within a team may impede the sharing of heterogeneous knowledge that can be of great importance for the successful development of new products (Rodan and Galunic 2004) This implies that the relationship among team stability, decision-making processes, and new product outcomes may be more complex than the literature has indicated

To shed light on these potentially complex relationships, we develop and test a process model in which the degree of project team stability relates to key decision-making processes (i e , team-level debate and decision comprehensiveness), which in turn relate to new product advantage (i e , the superiority of a new product's quality, features, and benefits relative to competitors) These two decision-making processes represent important aspects for strategic decision making (e g , Simons, Pelled, and Smith 1999) Team-level debate is a deliberate process in which team members discuss, challenge, and contest one another's opinions, ideas, and positions about the project's strategies, goal priorities, and overall objectives (Mitchell, Nicholas, and Boyle 2009,

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ISSN 0022-2429 (print), 1547-7185 (electronic)

Simons, Pelled, and Smith 1999) Decision-making comprehensiveness describes the degree to which the team is exhaustive as it considers multiple approaches, courses of action, and decision criteria in its strategic decision making (Fredrickson 1984, Simons, Pelled, and Smith 1999)

The logic for our process model rests on two theoretical foundations First, according to McGrath's (1984) classic input–process–output (IPO) model, organizational inputs (e g , team integration structures) influence organizational outputs (e g , new product advantage) through specific team processes (e g , decision making) Second, Brown and Eisenhardt (1995) conceptualize the NPD process as a disciplined, problem-solving process that involves many decision-making activities geared toward finding solutions to critical customer problems Consistent with the IPO model, Brown and Eisenhardt (1995) also make a theoretical distinction between the structural conditions that affect intermediate product development team dynamics and ultimate product outcomes Consequently, extant research that focuses solely on the direct effect of team structures on ultimate new product outcomes has created a mystery as to the intervening decision-making processes (e g , De Luca and Atuahene-Gima 2007) Furthermore, extant research that underscores the importance of decision-making processes in NPD (e g , Atuahene-Gima and Li 2004) has tended to overlook the potential mediating role of these processes between integration mechanisms and ultimate product outcomes We extend previous research by uncovering the decision-making "missing link" between an integration mechanism (project team stability) and new product advantage

Overall, this research offers important insight into the complexity surrounding the degree of stability in a cross-functional NPD project team and its link to new product advantage through decision-making processes Specifically, our results reveal that project team stability has a curvilinear relationship to team-level debate and decision-making comprehensiveness In turn, a team's level of debate is positively related to its decision-making comprehensiveness, and comprehensiveness has a curvilinear relationship to new product advantage These results have important implications In particular, our research illustrates the potentially crucial but complex role of decision-making processes as instruments through which a team's structure (i e , degree of stability) can enhance new product advantage The differential effects from these decision-making processes also have important implications for how project teams transfer knowledge across members Moreover, our results contribute to a better understanding of an important feature identified by group process scholars regarding the role of structure geared toward maintaining relationships and information flow (e g , McGrath 1984) Although the cross-functional composition of NPD teams offers the potential for specialized knowledge exchange, our research reveals that the degree of stability in an NPD project team is an important driver in the extent to which this potential is realized

Conceptual Framework

The knowledge-based view (KBV) of the firm points to knowledge as a critical resource for developing a competitive advantage and recognizes that managing knowledge can be a challenge (Grant 1996, Nonaka 1994, Szulanski 1996) Specifically, much of the knowledge that firms and people possess is specialized, tacit, and not easily articulated (Nonaka 1994) When effectively transferred and shared internally, such knowledge increases in value and becomes difficult for competitors to imitate (Argote and Ingram 2000) However, the generation, transfer, and sharing of specialized knowledge in teams can be time consuming and difficult (Szulanski 1996, 2000) In particular, knowledge sharing can be impeded by the tendency to guard and selectively share information (Hansen 1999, Szulanski 1996) Furthermore, because knowledge is localized, embedded, and invested in practice (e g , Lave 1988), "knowledge boundaries" arise among team members from different functions Such boundaries hinder interfunctional knowledge sharing and problem solving because of syntax, semantics, and political problems (Carlile 2002, p 442)

Although these boundaries make work across functions more challenging, the diversity inherent in cross-functional teams provides the potential to produce the specialized knowledge needed for developing new products Thus, firms find it necessary to use formal integration and coordination mechanisms to facilitate the development of a shared language, interpretation, and understanding to permeate the knowledge boundaries that emerge among project team members (Carlile 2002, Grant 1996) One formalized mechanism is the stability of a team (Akgun and Lynn 2002, Moreland and Argote 2003)

Project Team Stability

Project team stability refers to the extent to which the core members of a cross-functional team remain for the duration of the project, from project approval to product launch The core members of a cross-functional project team represent a limited group of people from different functions who are responsible for the management and coordination of project activities (e g , Griffin and Hauser 1992) Over the course of an NPD project, if all core members stay on the team and no changes are made, the team is considered fully stable In contrast, NPD teams are considered much less stable if core membership frequently changes over the duration of the project

From a KBV perspective, project team stability may offer the opportunity to attenuate the knowledge transfer problem by stimulating collaboration and encouraging open discussion among team members (Pelled, Eisenhardt, and Xin 1999) For example, when a group is initially formed, members spend some time getting to know one another, and this initial building phase is often marked by guarded exchange in which there is much hidden and unshared information (Tuckman 1965) However, as team members gain working experience with one another over the duration of the project, their interactions are likely to break down the knowledge-sharing barriers (Carlile 2002, Dougherty 1992) Consequently, although team members bring different knowledge bases and "systems of meaning" (Dougherty 1992, p 183), the degree of stability in the project team is likely to shape their interaction and decision-making processes (e.g., Carley 1991; Pelled, Eisenhardt, and Xin 1999). Figure 1 presents our conceptual framework.

Project Team Stability and Decision-Making Processes

We examine the relationship between team stability and two key decision-making processes: debate and decision comprehensiveness. These two decision-making processes represent important but distinct aspects of strategic decision making (e.g., Simons, Pelled, and Smith 1999). Whereas debate involves challenge in the decision-making process, comprehensiveness involves a process of generating many alternative courses of action, thoroughly analyzing all strategic options, and using multiple criteria in making decisions.

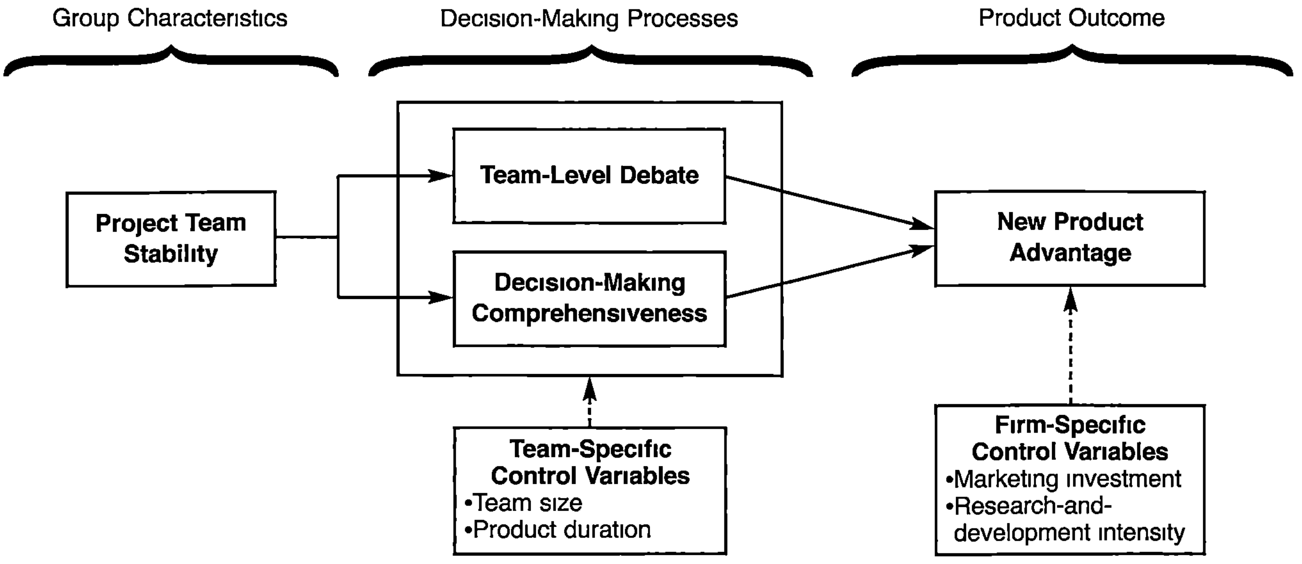
In terms of team-level debate, we argue that the relationship between project team stability and debate is positive up to a certain level of stability. In particular, the increased shared responsibility, group memory, and awareness of team members' problem-solving styles can enhance the manner in which team members share information and discuss issues. As project teams become more stable, there is an increased shared responsibility for the project goals and a greater personal stake in the project outcomes (e.g., Akgun and Lynn 2002). This heightens the search for and sharing of information because individual team members have a vested interest in seeing a successful project outcome. Furthermore, as team member stability increases, it ensures elevated group transactive memory of project activities that allows for coordinated access to each team member's knowledge and expertise (Akgun et al. 2005). This enables a higher level of debate because members have more project-related knowledge and information to frame their different points of view (Lewis 2004). Finally, as team members work together on the NPD project, they develop greater awareness of one another's decision-making styles. This enables team members to express different views and challenge or disagree with one another's ideas with greater candor and less concern about possible backlash (Mitchell, Nicholas, and Boyle 2009; Pelled, Eisenhardt, and Xin 1999).

However, beyond a certain point, too much stability may be detrimental to team-level debate. With greater team stability, the transactive memory system remains intact and offers team members access to a greater degree of teamwide knowledge (Lewis, Lange, and Gillis 2005). Yet research on social entrainment theory (McGrath and Kelly 1986) suggests that when team members develop acute shared transactive memory, they are less likely to publicly challenge one another's ideas. Moreover, the increased social interaction among team members and the greater involvement with the project can suppress the expression of vital alternative or challenging perspectives (Esser 1998). Consequently, we argue that there is an optimal level of NPD project team stability for team-level debate, below which the relationship is positive and above which the relationship is negative.

> H_1: Project team stability has a curvilinear relationship to team-level debate, illustrating an inverted U-shaped pattern.

We also expect project team stability to be positively related to decision-making comprehensiveness, up to a certain level of stability. In particular, the increased shared responsibility that greater project team stability facilitates heightens the team's search for more and better information. Indeed, research suggests that team members with a common goal tend to develop a larger pool of high-quality ideas and information by being more open to one another's diverse perspectives (Atuahene-Gima 2003). Moreover, the free flow of information generates a larger quantity of information and ideas for consideration in the decision-making process (Brown and Eisenhardt 1995; Sheremata 2000). The better quality and greater quantity of information

FIGURE 1
Conceptual Model: The Effect of Project Team Stability on New Product Advantage


Group Characteristics
Decision-Making Processes
Product Outcome
Project Team Stability
Team-Level Debate
Decision-Making Comprehensiveness
New Product Advantage
Team-Specific Control Variables
•Team size
•Product duration
Firm-Specific Control Variables
•Marketing investment
•Research-and-development intensity

enable the team to uncover multiple alternatives Finally, as members of a team continue to work together over the duration of a project, the increased opportunity for interaction and communication enables the team to generate and evaluate many courses of action (LaFasto and Larson 2001)

However, beyond a certain level of project team stability, we expect the relationship between team stability and decision comprehensiveness to be negative Members of highly stable teams may fail to realistically appraise alternative courses of action (e g , Esser 1998, Janis 1982) Carley (1986) shows that as members of a stable team become more familiar with project task activities, they begin to make assumptions about the task that cause them to overlook important information Moreover, they tend to assume that fellow team members hold views similar to their own By developing shared perspectives on many important issues and making such assumptions, team members fail to collect and consider contradictory information and to analyze key issues deeply Consequently, higher levels of team stability may limit the degree to which the team is exhaustive and comprehensive in its decision making Therefore, we expect an optimal level of project team stability for decision-making comprehensiveness, below which the relationship is positive and above which the relationship is negative

> H_2 Project team stability has a curvilinear relationship to decision-making comprehensiveness, illustrating an inverted U-shaped pattern

It is possible for debate to occur without decision comprehensiveness (Simons, Pelled, and Smith 1999), such that members propose different options that are not given sufficient consideration However, we anticipate that the level of debate enhances comprehensive decision making Greater comprehensiveness reflects a more exhaustive decision-making approach, involving consideration and analysis of a wide array of information and many courses of action (Fredrickson and Mitchell 1984) Team-level debate may elevate the comprehensiveness of a project team's decision making by introducing divergent perspectives and a variety of alternative courses of action As a result, a greater quantity of information and ideas is generated (Brown and Eisenhardt 1995, Sheremata 2000) Debate can also impel team members to analyze information to a greater extent, thereby ensuring a greater number of options to consider In support of these arguments, research shows that the degree of debate among top management teams enhances their consideration of multiple alternative courses of action (Talaulicar, Grundei, and Werder 2005) Therefore, we predict a positive relationship between a team's level of debate and its level of comprehensiveness in decision making

> H_3 NPD team-level debate is positively related to decision-making comprehensiveness

Decision-Making Processes and New Product Advantage

The problem-solving perspective of NPD (Brown and Eisenhardt 1995) suggests that an NPD project team must leverage its knowledge to develop a superior new product We argue that team-level debate and decision-making comprehensiveness have a central role in this process Regarding team-level debate, we expect an initial increase in debate to enhance new product advantage for several reasons First, as team members challenge assumptions and ideas about critical issues, they have a greater opportunity to synthesize their different perspectives and evaluate different solutions (Amason 1996, Dooley and Fryxell 1999, Jehn 1995) This discussion of conflicting perspectives can raise questions and deliberations about whether the addition of new product features will offer an advantage to consumers over current competitive offerings Second, as teams engage in debate, it can prevent tunnel vision and inflexibility in problem solving (Brown and Eisenhardt 1995), thus facilitating greater strategic use of market information (Moorman 1995) Finally, debate can encourage project members to delve into issues more deeply and develop a stronger understanding of problems, enabling them to uncover more effective solutions (Jehn 1995) Thus, a key benefit of debate is that it allows differences in perspectives and creativity in customer problem solving, which can elevate the potential for discovering specific features that fit customer needs

However, beyond an optimal level, we expect further increases in debate to hinder the team's ability to create a superior new product Specifically, a high level of debate may be detrimental to the process of developing more effective solutions to customer problems Information error can occur in the debate process that can adversely affect the processing of dissenting information (Dooley and Fryxell 1999) For example, with high levels of debate, a team member may be compelled to provide information, even though the facts are unfounded A team member may also provide inaccurate information in an attempt to deceive others or promote personal interests In addition, the information asymmetry and differences in specialized knowledge among team members have the potential to increase internal politics and personal animosity, which are detrimental to finding more effective solutions (Atuahene-Gima and Evangelista 2000) For example, constructive criticisms during debate may be misconstrued as attempts to gain unfair personal or functional advantage or as a challenge to the skills and competence of the team members whose views are criticized (Bourgeois and Eisenhardt 1988) Consequently, we expect an initial increase in team-level debate to enhance new product advantage, but beyond an optimal point, further increases in team-level debate will hinder new product advantage

> H_4 Team-level debate has a curvilinear relationship to new product advantage, illustrating an inverted U-shaped pattern

In terms of decision-making comprehensiveness, we expect an initial increase in comprehensiveness to enhance new product advantage First, comprehensiveness can induce decision makers to examine the environment, the behavior of competitors, and the underlying needs of customers to generate a larger pool of new ideas for new products (Miller, Droge, and Toulouse 1988) As the decision-making approach becomes more exhaustive, it reduces the potential of the project team falling victim to specific cognitive biases associated with incomplete information (Miller

2008) This enables decision makers to become more realistic and effective in their assessments of the environment (Sniezek 1992) Second, as decision comprehensiveness increases, it enables managers to uncover new insights that can enhance the relative advantage of the new product (Dean and Sharfman 1996, Eisenhardt 1989) The greater depth and expansive understanding of the environment increases the likelihood that team members will identify strengths and weaknesses of different alternatives to solving customer problems Such a process is likely to generate ideas that lead to the discovery of a product that is more advantageous than competing products (Atuahene-Gima and Li 2004) Finally, greater comprehensiveness in the decision-making process reflects greater investment of time and energy in the decision process, which can elevate commitment toward finding and implementing a superior solution (Miller 2008)

However, beyond an optimal level, we expect further increases in decision-making comprehensiveness to involve significant costs that hinder the team's ability to develop a superior new product From an information-processing perspective, an exhaustive analysis of the situation is likely to produce redundant information that distracts decision makers from the value of useful information (Nisbett, Zukier, and Lemley 1981) Furthermore, complete comprehensiveness can produce new and unfamiliar information to team members (Miller 2008) When this occurs, it becomes inefficient for the team to process the large quantity of unfamiliar information because of problems associated with bounded rationality and information overload Consequently, we expect an initial increase in decision-making comprehensiveness to enhance new product advantage, but beyond an optimal point, further increases in comprehensiveness will hinder new product advantage

> H_5 Decision-making comprehensiveness has a curvilinear relationship to new product advantage, illustrating an inverted U-shaped pattern

Method

Sample

Our sample consists of high-technology firms operating in China, given this economy's propensity to engage in product innovation activity (e g , White 2000) In developing the research instrument, we followed the double-translation method, in which the survey was first prepared in English and then translated into Chinese and then back into English to evaluate the translation accuracy We pretested the instrument using individual interviews with 17 managers who had at least three years of business experience in China to examine understanding of the survey questions and face validity of the constructs

From a directory of 2500 high-technology firms provided by a local consulting firm in Shanghai, we randomly contacted 500 firms From each firm, we collected data from two key informants who were involved in the same recent NPD project We asked the project leader to select the most recent new product launched within the last three years We restricted the recall time frame to three years or fewer to minimize problems associated with retrospective data collection (Miller, Cardinal, and Glick 1997) The project leader provided information on project team stability and new product advantage These informants were research-and-development (R&D) (65%) and marketing (35%) managers and had a mean industry experience of 11 22 years A second respondent, nominated by the first respondent as knowledgeable of and involved with the project selected, provided data on decision-making comprehensiveness, team-level debate, and the control variables These informants comprised marketing managers (52%), business development managers (34%), chief executive officers (8%), and R&D managers (6%) and had a mean industry experience of 8 99 years In addition to using multiple key informants, we further minimized common method bias concerns by offering anonymity and confidentiality to reduce socially desirable responses and assuring key informants that there were no correct or incorrect answers to reduce informant apprehension (Podsakoff et al 2003)

Overall, we received 208 pairs of usable questionnaires, for a response rate of 42%, with all sampled projects developed by cross-functional teams To ensure integrity of the data received, we telephoned each informant subsequent to the collection of the completed questionnaire to verify that he or she completed the questionnaire We motivated respondents by assuring them confidentiality and offering a summary of the research results and a free workshop on the research findings (information that would be meaningless to them in the absence of accurate data) To test for nonresponse bias, we compared a sample of 66 participating firms with a sample of nonparticipating firms for which we had data on R&D expenditures Analyses of variance indicated no significant differences between the two groups, and a test of early versus late respondents did not indicate significant differences with respect to the measures in the study

Measures

We adapted measures from previous studies when available or created them specifically for this study We present all multi-item measures, which relied on five-point Likert scales, and internal fit statistics in the Appendix and detail the measurement results in the next section

Key variables Because the length of time each person was a member of the project team was unavailable, we relied on key informants to provide information about team stability We measured project team stability with five items two that we created and three drawn from Agkun and Lynn (2002) We assessed the extent to which the informant agreed with statements pertaining to whether different core members of the project team stayed for the duration of the project

For team-level debate, we relied on a three-item scale adapted from Simons, Pelled, and Smith (1999) that asked respondents to indicate the extent to which the decision making among team members involved disagreement, challenge, and dissent regarding the project's strategies, objectives, and goal priorities For decision-making comprehensiveness, we adapted a four-item scale from Miller, Burke, and Glick (1998) that asked informants to rate the extent to which decision making in the NPD project involved consideration of a large number of alternatives, multiple criteria for evaluating the alternatives, and extensive examination of opportunities and possible courses of action

We measured new product advantage with five items that were partially based on the work of Atuahene-Gima and Li (2004) The scale asked respondents to indicate the extent to which the new product provided higher quality than competing products, offered unique benefits, and solved customers' problems more effectively than competitive offerings

Control variables In testing our hypotheses, we included additional variables to control for potential extraneous effects First, we controlled for two team-specific effects on decision-making debate and comprehensiveness In particular, previous research has shown that the size of the team influences decision-making processes (e g , Amason 1996, Dooley and Fryxell 1999), and the duration of the project is likely to influence the opportunities to engage in decision making and thus may affect decision-making processes Therefore, we controlled for potential effects from team size, which we measured as the number of members on the team, and project duration, which we measured as the length of time (in months) it took to complete the NPD project [1] The average team size was five members, and the average project duration was five months

Second, we controlled for two firm-specific effects on new product advantage Because R&D investments may generate better products and improve productivity (e g , Bean 1995), we controlled for potential effects of R&D intensity, measured as R&D investments as a percentage of sales, on new product advantage [2] In addition, because investments in marketing research and brand building may generate insights regarding consumer needs, brand strength, and the competitive landscape, we included marketing investment using a two-item measure that captures the extent to which a firm has made significant investments in marketing research and brand building

Analysis and Results

Analysis

To specify the model and estimate the parameters, we used a partial least squares (PLS) estimation approach, which is a component-based structural modeling technique (Wold 1985) that offers specific advantages over covariance-based approaches (e g , Fornell and Bookstein 1982) Given our sample size and the number of paths to estimate in our model, an important advantage of PLS is that its least squares approach to solving structural equation models demands fewer data points for analysis In addition, PLS is more appropriate when measures are not well established (Fornell and Bookstein 1982, Wold 1985) To test the curvilinear relationships of project team stability, team-level debate, and decision-making comprehensiveness, we modeled their quadratic terms using the procedure that Ping (1995) recommends To assess the significance of parameter estimates, we used a bootstrap approach with 200 resamples, with each sample consisting of the same number of cases as the original sample (Efron and Tibshirani 1993)

Measurement Results

In PLS, reliability of individual items is assessed by examining the loadings of the items with their respective latent construct, loadings of less than 5 may represent poorly worded or inappropriate items and thus should be eliminated from the model (Hulland 1999) As the Appendix reports, all measurement items exceed this threshold and load significantly on the expected constructs

Furthermore, all constructs have acceptable levels of reliability, with the composite reliability coefficients ranging from 84 to 87 for each construct, exceeding the 7 recommended threshold (Nunnally 1978) Convergent validity is also evident, with the average variance extracted (AVE) for each construct ranging between 52 and 71, exceeding the 5 benchmark (Fornell and Larcker 1981) To test for discriminant validity, we used Fornell and Larcker's (1981) approach by examining whether the square root of the AVE of each construct (shown in the diagonal in Table 1) was greater than the correlations between variables All constructs demonstrate discriminant validity

Structural Results

Table 2 reports the results for the structural model Because PLS does not provide statistics to measure overall model fit,

TABLE 1
Descriptive Statistics and Correlation Analysis

		M	SD	1	2	3	4	5	6	7	8
1	Project team stability	3 69	79	**.72**							
2	Decision comprehensiveness	3 91	75	47	**.79**						
3	Team-level debate	3 64	78	31	48	**.82**					
4	New product advantage	3 92	60	33	53	32	**.75**				
5	Team size	5 01	2 82	03	11	11	13	**N A**			
6	Project duration	5 04	2 95	– 13	01	– 03	06	16	**N.A**		
7	Marketing investment	3 60	99	23	34	27	34	– 08	– 08	**.84**	
8	R&D intensity	3 71	84	39	53	26	49	– 03	– 09	23	**N.A.**

Notes Correlations of latent variables ≥ 14 are significant at $p <$ 05 Diagonal (bold) elements are square roots of the AVE, note that AVE is not applicable for single-item measures (i e , team size, project duration, and R&D intensity) N A = not applicable

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[1] We eliminated 13 cases for which project duration was longer than 15 months to reduce potential bias associated with informant recall of the decision-making processes that occurred during the project

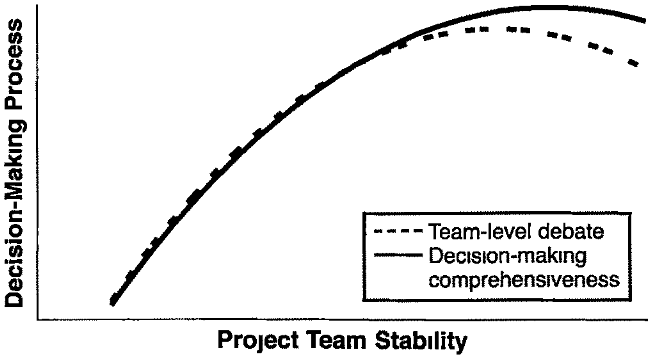
[2] We derive 5% as an appropriate alpha level for our PLS analysis using Murphy and Myors's (2004) statistical power analysis program and therefore judge statistical significance at 5% and 1%

TABLE 2
Structural Results

Hypothesized Paths	Path Coefficients
Project Team Stability on Decision-Making Processes	
H_1 Project team stability → team-level debate	36**
H_1 (Project team stability)^2 → team-level debate	– 13*
H_2 Project team stability → decision-making comprehensiveness	42**
H_2 (Project team stability)^2 → decision-making comprehensiveness	– 11*
Effects of Decision-Making Processes	
H_3 Team-level debate → decision-making comprehensiveness	35**
H_4 Team-level debate → new product advantage	– 01
H_4 (Team-level debate)^2 → new product advantage	06
H_5 Decision-making comprehensiveness → new product advantage	– 25
H_5 (Decision-making comprehensiveness)^2 → new product advantage	59*
Control Variables	
Team size → team-level debate	10*
Team size → decision-making comprehensiveness	05
Project duration → team-level debate	– 01
Project duration → decision-making comprehensiveness	06
Marketing investment → new product advantage	17**
R&D intensity → new product advantage	26**
Explained Variance	
Team-level debate	12
Decision-making comprehensiveness	36
New product advantage	38

*$p <$ 05
**$p <$ 01

FIGURE 2
The Relationship Between NPD Project Team Stability and Decision-Making Processes



the variance explained can be used to assess nomological validity (Hulland 1999), with 38% of the variance explained for new product advantage In terms of control variables, the results show that team size elevates team-level debate The results also reveal that firm-specific investments in marketing and R&D are positively related to new product advantage

Regarding our predicted effects, the results reveal that project team stability has a significant, positive linear and a significant, negative quadratic relationship to team-level debate and to decision-making comprehensiveness Thus, the results lend support for both H_1 and H_2 To illustrate these relationships further, we plotted the effects across the data range of project team stability (see Figure 2) Evident in this figure are the distinct curvilinear patterns for each of these decision-making processes In particular, the relationship between project team stability and decision-making comprehensiveness attenuates at high levels of stability, whereas the relationship between project team stability and team-level debate shows a distinct decrease at high levels of stability Note that the value of project team stability continues to elevate as the degree of stability increases, and it is not until high levels of stability that declines begin Thus, to gain the greatest benefits from team-level debate and decision-making comprehensiveness, teams with a moderate to high level of stability seem to be most advantageous

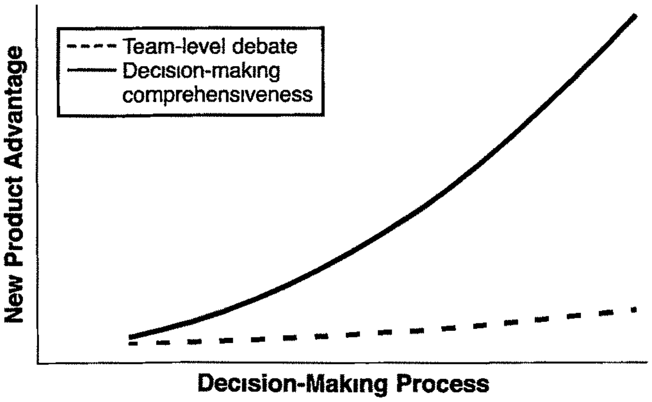
Furthermore, team-level debate has a significant, positive relationship to decision-making comprehensiveness ($\beta =$ 35, $p <$ 01), offering support for H_3, but it does not have a significant relationship to new product advantage However, the results show that decision comprehensiveness has a nonsignificant linear but a significant quadratic relationship to new product advantage To illustrate these patterns further, we plotted the effects across the two decision-making processes As Figure 3 shows, the relationship between team-level debate and new product advantage remains relatively flat, whereas the relationship between decision-making comprehensiveness and new product advantage reveals a curvilinear, increasing relationship Therefore, as the level of an NPD project team's decision-making comprehensiveness increases, it heightens the team's potential to offer a superior new product

Consistent with the IPO model (McGrath 1984), the results indicate that the degree of stability in an NPD project team influences the team's decision making in complex ways, and through these relationships, project team stability can have important implications for new product advantage We present the implications of our results in greater detail in the next section

Discussion

In this study, we set out to understand better whether the degree of stability in cross-functional NPD project teams influences important team-level decision-making processes and the resulting new product advantage Our motivation was that though the use of cross-functional teams in innovation can offer many benefits, disadvantages related to bridging the disparate objectives and perspectives can be a substantial hurdle One approach for overcoming these hurdles

FIGURE 3
The Relationship Between Decision-Making Processes and New Product Advantage



is the degree of stability in cross-functional NPD project teams, a structural coordination mechanism frequently embraced in business practice.

Overall, this research reveals that project team stability can play an important role in the NPD process through its relationship to decision-making debate and comprehensiveness. Consequently, our study provides some support for the use of structural approaches in facilitating knowledge sharing, an idea prominent in the KBV (Grant 1996). Although the intrafirm transfer of tacit, complex knowledge can be time consuming and difficult (Hansen 1999, Szulanski 1996), the degree of stability in an NPD project team can offer value. Our results reveal that the willingness to withhold specific information and the apprehension in sharing sensitive information that often occurs in project teams (Luo, Slotegraaf, and Pan 2006, Stasser and Stewart 1992) may dissipate as team members continue to work with one another over the course of a project. Therefore, the degree of stability in a cross-functional NPD project team can play an important role in permeating functional knowledge boundaries, thus fostering the exchange of crucial knowledge. In brief, the degree of stability in a team has important implications for effective decision making.

However, our results also indicate that teams with high levels of stability face specific obstacles or impediments that diffuse decision-making effectiveness. Specifically, although decision-making debate and comprehensiveness are two important strategic decision-making processes (Simons, Pelled, and Smith 1999), our research reveals that the degree to which an NPD project team engages in these two decision-making processes dissipates at higher levels of stability. A possible explanation for these complex relationships is that team members in a highly stable team have become too comfortable with one another, and so increased amicability across team members occurs. As a result, team-level debate diminishes. It is also possible that members of a highly stable team gain group memory that becomes stagnant. This suggests that the debate and decision-making comprehensiveness in more stable teams reach natural limits unless teams actively engage in seeking external sources of information.

In summary, our results reveal a complex process model that contributes to marketing theory in three main respects. First, we assimilate the role of project team stability into the KBV research stream by highlighting its influence on knowledge transfer and decision making as keys to sustainable advantage (Grant 1996). Although the KBV asserts that knowledge is the most important resource, a fundamental challenge lies in the conversion of knowledge into internal competences for innovation. Addressing the link between project team stability and decision-making processes in cross-functional teams, we offer insight into this challenge and present a new perspective regarding the role of project team stability in NPD. Although marketing scholars have examined the role of decision-making processes, few have examined the key intervening role of decision making in unearthing the inherent value of project team characteristics. By examining these complex linkages, we contribute to the marketing literature and the KBV by highlighting a mechanism by which project team structures could be linked to ultimate project outcomes.

Second, this study contributes to marketing theory by being the first to show empirically that decision-making debate and comprehensiveness have differential effects on new product advantage. In particular, finding that team-level debate affects new product advantage not directly but through decision comprehensiveness is revealing. This has important theoretical implications for how firms and project teams use internal deliberations to foster knowledge transfer in NPD. For example, the unquestionable advantages of debate for enhancing creative thinking may lead scholars to assume that debate is, in and of itself, valuable to project outcomes. We reveal that this assumption may be erroneous by showing that for the firms in our sample, debate becomes valuable for new product advantage only if it facilitates comprehensive decision making. In contrast, our results show that comprehensiveness in the decision-making process is directly valuable for new product advantage.

Contrary to our expectations, we also find that higher levels of comprehensiveness can be more beneficial to generating a superior new product. A possible explanation for this result is that higher levels of comprehensive decision making in a team generate a heightened concentration on important ideas (Dooley and Fryxell 1999) and a better understanding of the market situation and customer problems (Brown and Eisenhardt 1995). A better solution is an indication that the project team was able to focus on the content of important information, generate a better understanding of the competitive landscape, and uncover underlying customer problems to produce a new product that meets customer needs better than competing alternatives. A stronger appreciation of the situation through comprehensive decision making enables the team to be more attuned to market needs and, therefore, less likely to overengineer new products (Rust, Thompson, and Hamilton 2006). It is also possible that the benefits associated with a stable NPD project team help alleviate disadvantages associated with comprehensive decision making. For example, as teams work together throughout the duration of the project, they develop shared norms and coordinated transactive memories that may alleviate information overload from a comprehensive decision-making process In brief, our results shed a potentially counterintuitive perspective on the underlying value of comprehensiveness This echoes the complexities that Miller (2008) finds between decision-making comprehensiveness and profitability and suggests that comprehensive decision making has more powerful benefits than previously thought (Atuahene-Gima and Li 2004)

Third, we show that an explicit consideration of how project team characteristics affect the team's decision making is critical for a more complete understanding of the project team's role in the NPD process In particular, our results show that project team stability offers the potential for specialized knowledge exchange through curvilinear relationships to the debate and comprehensive decision making that occurs in cross-functional NPD teams This calls attention to the need for explicit consideration of structural and process drivers of new product outcomes

Managerial Implications

This research holds important implications for managers because project teams are often formed with the purpose of sharing information and coordinating specialized knowledge Failure to perform these processes can result in inferior decisions and weaker products Of note is the potential impact of the degree of stability in an NPD project team on the team's decision-making effectiveness Managers have several controllable project team characteristics at their disposal, such as team size, diversity, geographic location, and functional composition Our research indicates that project team stability also deserves managerial attention because it involves a complex relationship to decision-making processes that requires caution in the design and management of NPD project teams It is important to note that because project team stability does not solely offer a beneficial influence in the NPD process, managers should be prudent in determining the extent to which project teams should be designed to remain stable

Foremost, our research suggests that managers should attempt to form a strong cross-functional team at the initial stage of the project and to limit changes to the team throughout the duration of the project We acknowledge that it is often difficult for firms to maintain an NPD project team with complete stability Moreland and Argote (2003) argue that one of the practices that unwittingly prevents companies from leveraging the knowledge embedded in teams is the failure to control member turnover Therefore, attempting to build stability into an NPD project team should be one of the first initiatives in designing the team

However, the value of stability on decision-making debate and comprehensiveness diminishes at higher levels of stability Thus, to attain the benefits associated with stability, explicit procedures or practices can be included in the NPD project process to help foster debate and comprehensiveness For example, use of devil's advocacy and dialectical inquiry (e g , Schweiger, Sandberg, and Ragan 1986) may attenuate the negative effects associated with highly stable NPD teams by infusing constructive conflict and critical evaluation in the formal decision-making process This can also be achieved by actions that enhance the perceived trustworthiness, perceived competence, and loyalty among team members Such a team atmosphere helps address uncertainties about team members' motives, enhances open communication, and allows members to concentrate on the content of information in the decision-making process (Dooley and Fryxell 1999)

Furthermore, managers should not focus solely on project team stability Rather, they should be conscious of the nature of the decision-making processes through which the benefits of project team stability are to be achieved Thus, managers must take a more a holistic view of the linkages among a team's structure, important decision-making processes, and resulting outcomes or goals for the project In view of our results, managers should institute structural arrangements to ensure vibrant team-level debate and decision comprehensiveness in addition to the structure of the team itself For example, firms can instill training methods or organizational rewards to encourage constructive debate as well as team environments (e g , separate meeting rooms) that encourage lengthy and comprehensive discussions These approaches can help alleviate disadvantages associated with higher levels of team stability Without a holistic perspective, managers must recognize that the benefits of greater project team stability for new product advantage may not necessarily occur

Limitations and Directions for Further Research

The goal of this research was to elucidate the role of NPD project team stability in the NPD process Although we offer insight into the complex role of project team stability, our research contains limitations that indicate different avenues for further research

First, our measure of project team stability is a subjective measure, in which some items may be interpreted by key informants as either wholly stable or unstable Further research could address this limitation by pursuing additional measures of stability that are objective or experimentally manipulated In addition, our measure of NPD project team stability captures the extent to which core team members remain on the project Thus, consequences from the infusion of instability from the replacement, addition, or elimination of a team member are unknown Although these latter two examples represent change in team stability over the duration of the project, they also involve change in the size of the team

Another possible extension would be to explore implications of stability with other team-specific characteristics and at different stages in the NPD process For example, the concept of stability can be demarcated from team longevity Team longevity refers to the length of time team members have worked with one another (Katz 1982) and can occur across multiple projects In contrast, project team stability focuses on a single project, referring to the extent to which team members remain for the duration of a specific project Consequently, pitfalls associated with high levels of team longevity may not necessarily occur for a team that remains highly stable for a specific project An extension of our study would be to explore the implications of the interaction between team stability and longevity on key team processes and outcomes. It would also be fruitful to understand when it is more valuable to have team stability at different times in the NPD process For example, understanding whether higher NPD team stability is more valuable during the early conception stages, when generation of many ideas is important, or during the later implementation stages, when buy-in to the strategy and tactics are critical, would be a useful avenue for further research

Second, our data are cross-sectional rather than longitudinal Although this prevents us from testing causality, we do not believe that common method bias is a serious concern in our study In addition to the efforts we took in the research design to validate the measures, the statistical test for method variance did not reveal any problems Our use of multiple key informants for different stages of the process model also reduces the problem of common method

Third, we rely on data from a sample of Chinese firms from a commercial list provider, which thus limits the generalizability of our results Specifically, scholars have identified several cultural differences among countries In collectivist cultures, such as China, people tend to place greater importance on harmony and thus tend to avoid open dissent and direct confrontation in decision making This tendency, coupled with the high importance given to the maintenance of face for oneself and others, suggests that team debate is more likely to have detrimental effects in China If this is so, our findings are profound in that they show the facilitating role of debate on decision-making comprehensiveness Thus, the extent to which our results differ from a sample in more individualist and uncertainty-accepting cultures is a fertile area for further research

Finally, other avenues for further research also exist One avenue is to explore other new product outcomes to offer additional insight into the value of NPD project team stability For example, Akgun and Lynn (2002) show that team stability increases speed to market, which is critical for competitive advantage in many hypercompetitive markets Although we find an increasing relationship between decision comprehensiveness and new product advantage, the effects from comprehensive decision making may differ for speed to market and thus influence the implications from project team stability Another product outcome is new product creativity New product creativity is influenced by organization-level knowledge and information (e g , Moorman 1995), and an underlying tension may exist between new product creativity and the social cohesion among team members (Sethi, Smith, and Park 2001)

Research could also explore the underlying knowledge exchange process in NPD project teams with varying levels of stability as well as the set of possible conditions that may influence the effects from team stability Although Akgun, Lynn, and Byrne (2006) show that beliefs change as an NPD team changes, further research is needed to understand how knowledge is exchanged within NPD project teams and how this changes as team membership changes over the course of a project Moreover, new techniques for improving team decision making, such as group support systems (Jessup and Tansik 1991) and the more prevalent use of global virtual teams (Montoya-Weiss, Massey, and Song 2001), indicate the importance of understanding decision-making synergies This is a critical research direction because several factors (e g , lack of common syntax, lack of common interpretation of information, distinct functional knowledge in use) impede effectively developing a shared understanding in cross-functional NPD teams Thus, greater understanding into how project team stability can increase the information processing capacity of a team offers an important avenue for further research

Conclusions

This research provides an important initial step toward understanding that though the cross-functional composition of NPD teams offers the potential for specialized knowledge sharing, the stability of the team is an important driver in the extent to which this potential is realized Our core findings alert scholars to appreciate fully the underlying complex relationships that can be driven by structural coordination mechanisms in the NPD process and to recognize the potential differential power of various team structures and decision-making processes Further research should continue to explore the process activities and mechanisms through which stability and other potential team structures can affect NPD project outcomes

APPENDIX
Measurement Results

Construct	Description	λ	t-Value
Project Team Stability	•Department managers on the project team remained from beginning to end	68	13 7
AVE = 52	•Project team members remained from beginning to end	81	24 3
CR = 84	•For the duration of the project there were no changes in the core team members	77	24 1
	•Project leader who started the project remained on from beginning to end	65	11 3
	•Team membership was stable, core members did not come and go during the project	68	13 6
Team-Level Debate	*In making decisions in the project,*		
AVE = 67	•Team members showed disagreement about different goal priorities of the project	79	12 7
CR = 86	•Team members had heated debates over the best ways to ensure project success	83	23 0
	•Team members showed dissent over the objectives of the project	82	22 9

APPENDIX
Continued

Construct	Description	λ	t-Value
Decision-Making Comprehensiveness AVE = 62 CR = 87	*In making decisions in the project, we*		
	•Developed many alternative courses of action	79	27 6
	•Used multiple criteria for eliminating possible courses of action	76	22 7
	•Engaged in extensive and in-depth analysis of all available strategic options	77	18 4
	•Thoroughly examined multiple explanations for problems or opportunities	82	30 7
Marketing Investment AVE = 71 CR = 87	*To what extent does your firm compare with your major competitors on the following*		
	•Investments in marketing research	91	32 2
	•Investments in brand building and advertising	77	12 2
New Product Advantage AVE = 56 CR = 87	•The quality of the product compared well with similar competitor products	76	31 4
	•The product was of higher quality than competing products available to customers	78	26 2
	•The product solved problems customers had with competitor products	74	21 1
	•The product offered unique benefits to customers	75	20 0
	•The product performance met established standards better than competition	74	20 9

Notes All items rely on five-point scales (1 = "strongly disagree," and 5 = "strongly agree") CR = composite reliability The results are based on bootstrapping resampling estimation using 200 samples

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Ernst C. Osinga, Peter S.H. Leeflang, Shuba Srinivasan, & Jaap E. Wieringa

Why Do Firms Invest in Consumer Advertising with Limited Sales Response? A Shareholder Perspective

Marketing managers increasingly recognize the need to measure and communicate the impact of their actions on shareholder returns This study focuses on the shareholder value effects of pharmaceutical direct-to-consumer advertising (DTCA) and direct-to-physician (DTP) marketing efforts Although DTCA has moderate effects on brand sales and market share, companies invest vast amounts of money in it Relying on Kalman filtering, the authors develop a methodology to assess the effects from DTCA and DTP on three components of shareholder value stock return, systematic risk, and idiosyncratic risk Investors value DTCA positively because it leads to higher stock returns and lower systematic risk Furthermore, DTCA increases idiosyncratic risk, which does not affect investors who maintain well-diversified portfolios In contrast, DTP marketing has modest positive effects on stock returns and idiosyncratic risk The outcomes indicate that evaluations of marketing expenditures should include a consideration of the effects of marketing on multiple stakeholders, not just the sales effects on consumers

Keywords stock price returns, stock price volatility, pharmaceutical marketing, advertising, time-varying parameters, Kalman filtering

Stock prices reflect the expected future value of firms This value also depends on marketing expenditures, both through intermediate metrics and in the form of a direct effect on investors (Srinivasan and Hanssens 2009) Such effects are evident in the levels of (first moment) and fluctuations in (second moment) stock prices Thus, in principle, marketing expenditures such as advertising may have limited sales response effects but significant investor response effects, or vice versa

Recent research has demonstrated that a firm's advertising affects stock returns, beyond the effect of advertising on revenues and profits (e g , Joshi and Hanssens 2010) Similarly, communicating the added value created by product innovation yields greater firm value effects (e g , Srinivasan et al 2009) As McAlister, Srinivasan, and Kim (2007) report, a firm's advertising also lowers its systematic market risk Consequently, to evaluate marketing expenditures properly and improve marketing resource allocations, models that consider the effects of marketing expenditures on multiple stakeholders, such as customers and investors, are necessary (e g , Luo 2007)

In this study, we examine the influence of advertising expenditures on investors and thus (1) the levels of stock returns and the risk associated with these returns, distinguishing (2) systematic (market risk factor) and (3) idiosyncratic (firm-specific) risks Our framework also moves beyond the theories and variables used in previous studies to determine whether firms should invest in marketing actions with limited sales response In doing so, this study offers new contributions over previous research (e g , Joshi and Hanssens 2010, McAlister, Srinivasan, and Kim 2007) In particular, we simultaneously estimate the effects of marketing on all three components of shareholder value using Kalman filtering Building on the four-factor model that Carhart (1997) proposes, we develop a dynamic model to relate pharmaceutical direct-to-consumer advertising (DTCA) and direct-to-physician (DTP) marketing expenditures to stock returns and volatilities while controlling for financial performance

Pharmaceutical DTCA is a relatively new, and heavily debated, phenomenon The Food and Drug Administration (FDA) relaxed regulations on DTCA only in 1997 Recent

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ISSN 0022-2429 (print), 1547-7185 (electronic)

research suggests limited short- and long-term effects of DTCA on sales, which places pharmaceutical marketers, similar to their counterparts in other industries, under constant pressure to justify their sales and marketing budgets. We investigate why many pharmaceutical firms continue to spend on DTCA despite the limited sales effects. Prior research in this field has largely focused on marketing performance outcomes, such as sales, share, and compliance (Kremer et al. 2008; Manchanda et al. 2005; Wosinska 2005), which cannot explicitly quantify the financial outcomes of pharmaceutical DTCA. We are not aware of any study that systematically quantifies the impact of DTCA on stock returns and volatilities. To fill this gap, we aim to capture the impact of DTCA on returns and volatilities and compare the effects of DTCA with those of other marketing expenditures, such as those directed toward physicians.

The outcomes of our study reveal that investors' response to DTCA is positive. On average, over time, and across firms, we find that DTCA leads to higher stock returns and lower systematic risk. The effect of DTCA on idiosyncratic risk is positive. In contrast, DTP marketing has only modest positive effects on stock returns and idiosyncratic risk. This has important consequences for the allocation of marketing expenditures over DTCA and DTP.

In the next section, we provide some background on DTCA in the pharmaceutical industry, followed by a conceptual framework of the relationship between marketing expenditures and shareholder value. After we describe our research methodology, we provide a description of the marketing and financial data used, and then we outline the empirical results. Finally, we offer managerial implications, formulate conclusions, and discuss their implications for marketing academics and practitioners.

Background on Pharmaceutical DTCA

Before 1980, pharmaceutical DTCA was nearly nonexistent. Beginning in the 1980s and early 1990s, a limited amount of DTCA began appearing. Expenditures on DTCA increased dramatically after the FDA relaxed its regulation of ethical drug advertising on television in August 1997. For the first time, the FDA permitted product-specific DTCA that could mention both the drug's name and the condition for which it was to be used, without disclosing a summary of contraindications, side effects, or effectiveness (a "brief summary") (Rosenthal et al. 2002). Since then, DTCA expenditures have increased faster than expenditures on other marketing instruments in the pharmaceutical industry (IMS Health 2009).

Empirical research establishes only moderate short- and long-term sales effects from DTCA (e.g., Berndt et al. 1995; Kremer et al. 2008; Narayanan, Desiraju, and Chintagunta 2009; Osinga, Leeflang, and Wieringa 2010; Wittink 2002). According to Kremer and colleagues (2008), DTCA elasticities vary across therapeutic classes, with an average of .073. Other pharmaceutical research establishes that DTCA has limited to no effect on the prescribing behavior of physicians (Law, Majumdar, and Soumerai 2008). Iizuka and Jin (2005) and Wosinska (2005) find that DTCA does not affect drug brand choice. Amaldoss and He (2009) and Stremersch and Van Dyck (2009) summarize other salient empirical findings on DTCA. Medical researchers also find insignificant effects on patient requests for prescription medication (Parnes et al. 2009). In contrast, there are many empirical studies in which significant effects of DTP have been found. In their meta-analysis, Kremer and colleagues (2008) find average elasticities of detailing efforts of .326 and of DTP advertising of .123 over all therapeutic classes that have been studied thus far.

A plausible explanation for the moderate DTCA effect on sales is a prisoner's-dilemma situation; that is, firms' DTCA efforts cancel each other out, and if a firm were to cease its DTCA activities, it would lose significant sales.[1] However, two empirical realities run counter to this hypothesis. First, manufacturers with drugs in the same category often do not allocate their DTCA budgets over time in the same way. Therefore, although DTCA effects may potentially be offset by competitive DTCA in the next period, a sales model would show significant own and cross-effects. Second, drugs are generally protected by patents. As a consequence, a pure competitor frequently does not exist, and in some categories, a drug may even have no competition at all. Wittink (2002) and Osinga, Leeflang, and Wieringa (2010) study a large number of categories with differing levels of competition and conclude that, in general, DTCA has only a modest sales impact. If DTCA activities are successful but canceled out by competition, categories with little or no competition would show significant sales effects. As far as we are aware, no such evidence has been obtained, leaving unresolved the question of why firms invest in consumer advertising with limited sales response.

In summary, do these various findings from different research fields mean that DTCA is not effective and that the pharmaceutical marketing budget is not optimally allocated? We take a broader view of DTCA and consider the effects of DTCA on shareholder value to answer that question.

Research Framework: Marketing Expenditures and Shareholder Value

Shareholder value depends on stock returns and risk. Stock returns are the percentage change in a firm's stock price; we define risk according to two components: systematic and idiosyncratic risk (Bansal and Clelland 2004; Campbell et al. 2001). Systematic risk entails the economywide sources that affect the overall stock market (e.g., interest rate shifts, exchange rates, macroeconomic developments) that cannot be diversified away through a balanced portfolio. Thus, investors can use the sensitivity of an individual stock's return to systematic (market) risk to determine the stock price. Idiosyncratic risk is the uncertainty about the price of a specific stock—that is, volatility not associated with that of other stocks. This type of risk can be eliminated through effective portfolios, and it does not influence investor valuation of the stock (Brealy, Myers, and Marcus 2001).

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[1] We thank an anonymous reviewer for indicating this possibility.

The efficient market hypothesis implies that stock prices reflect all known information about the firm's future earnings prospects (Fama 1970) For example, investors may expect the firm to maintain its usual level of advertising and price promotions Developments (in the form of unexpected changes) that positively affect future cash flows result in increases in stock price, while those that negatively affect cash flows result in decreases Fehle, Tsyplakov, and Zdorovtsov (2005), Frieder and Subrahmanyam (2005), and Grullon, Kanatas, and Weston (2004) show that advertising increases the firm's salience for individual investors, who typically prefer holding stocks that are well known or familiar to them, thus increasing demand for the firm's stock Accordingly, both unexpected changes in advertising and the total amount of advertising can affect shareholder value

Several studies assess the effects of marketing actions, including advertising and promotions, on shareholder value First, a stream of research establishes a relationship between shareholder value and intermediate marketing asset metrics, such as customer equity (Rust, Lemon, and Zeithaml 2004) and brand equity (Madden, Fehle, and Fournier 2006)

A second stream of research measures the direct effects of marketing actions on stock price metrics, which represent the focus of our study Table 1 summarizes some representative studies of the effect of marketing actions on shareholder value For example, previous investigations have considered the effects of new products and sales promotions (Pauwels et al 2004) and the influence of advertising and research and development (R&D) on the stock returns of firms in the personal computer manufacturing industry (Joshi and Hanssens 2010) McAlister, Srinivasan, and Kim (2007) and Fornell and colleagues (2006) address the omission of risk as an outcome variable in marketing literature by focusing solely on systematic risk In addition to studying the impact of advertising and, for example, detailing on the levels of returns, we study their effect on systematic and idiosyncratic risk components Our conceptual framework in Figure 1 illustrates how our study contributes to existing literature in this research stream

Marketing Expenditures and Levels of Stock Returns

Advertising can increase shareholder value by increasing revenues The outcomes of several studies suggest that advertising has a direct effect on firm performance metrics, including sales (Vakratsas and Ambler 1999) and profits (Erickson and Jacobson 1992) Thus, unanticipated changes in the level of advertising affect cash flow expectations In addition, studies confirm that advertising expenditures create an intangible asset (Barth et al 1998, Rao, Agarwal, and Dahlhoff 2004) From an investor's perspective, advertising spending has a positive and long-term impact on a firm's market capitalization (Joshi and Hanssens 2010) that persists beyond the indirect effect of advertising through revenues and profits on market capitalization Furthermore, advertising increases demand for a firm's stock because it enhances the firm's salience for individual investors (Barber and Odean 2008, Fehle, Tsyplakov, and Zdorovtsov 2005, Frieder and Subrahmanyam 2005, Grullon, Kanatas, and Weston 2004, Lou 2009) Using data from many firms, Chemmanur and Yan (2009) find that stock returns increase in a year of high advertising expenditures but may decline in a subsequent year as a result of advertising wear-out This effect is likely to be even stronger in the case of pharmaceutical firms, given that advertising expenditures grew rapidly after the regulation relaxation, enhancing the visibility of and attention for pharmaceutical firms The effect on demand for the firms' stocks likely disappeared in the long run as a result of advertising wear-out and saturated demand, in other words, individual investors will not keep on buying additional units of stock In summary, we expect that unanticipated increases in DTCA raise stock returns in the pharmaceutical industry In addition, we expect that this effect is strongest directly following the regulation relaxation Thus, we posit the following

H_1 DTCA increases stock returns

H_2 The effect of DTCA on stock returns is strongest directly after the regulation relaxation

Unexpected changes in DTP expenditures may alter cash flow expectations However, the firm's stock price will only be affected when investors observe these unexpected changes As DTP efforts are directed toward prescribers, investors only observe DTP expenditures through press releases or quarterly or annual reports or by buying these data from a company such as IMS Inspection of quarterly reports shows that detailed DTP expenditures are typically not provided Experts in the field and IMS contacts indicate that large investors indeed buy data, however, this mostly involves financial data about companies' or products' market positions Therefore, we conclude that, in general, investors do not observe DTP expenditures on a weekly or monthly basis Given the low visibility of changes in DTP spending, we hypothesize the following

H_3 DTP marketing has no effect on stock returns

Marketing Expenditures and Systematic Risk

Srivastava, Shervani, and Fahey (1998) indicate that the differentiation of a brand through advertising may lead to monopolistic power, which can be leveraged to extract superior product-market performance, perhaps leading to more stable (i e , less dependent on market performance) earnings in the future Furthermore, advertising enhances market penetration, makes it easier to launch product extensions, and increases customer loyalty Through these mechanisms, advertising reduces cash flow volatility (Fischer, Shin, and Hanssens 2009) and, thus, systematic risk Advertising also may help smooth out the variability in highly seasonal demand patterns, which should lower cash flow volatility Research findings indicate that advertising and R&D indeed lower a firm's systematic risk (McAlister, Srinivasan, and Kim 2007)

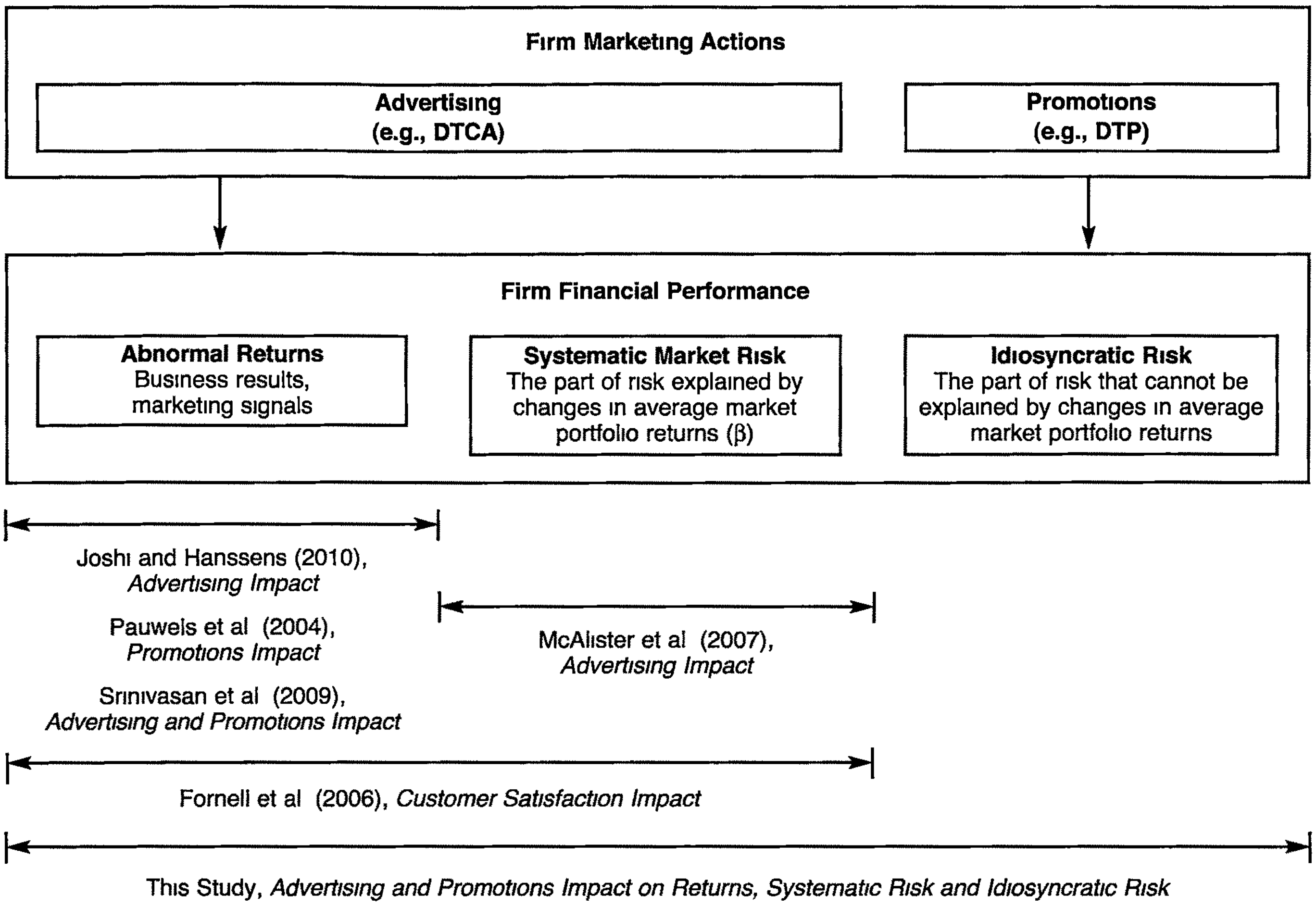
Advertising also can influence investor portfolio choices Individual investors, unlike institutional ones, prefer holding stocks of well-known firms (Frieder and Subrahmanyam 2005) Through advertising, firms can enhance awareness among investors and inform them about new products Thus, firms that engage in higher levels of adver-

TABLE 1
Illustrative Research on the Impact of Marketing on Stock Price Metrics

Illustrative Studies	Marketing Variables/ Asset Metrics	Stock Price Metrics: Returns	Stock Price Metrics: Systematic Risk	Stock Price Metrics: Idiosyncratic Risk
Lane and Jacobson (1995)	Brand attitude, familiarity	Yes	No	No
Aaker and Jacobson (2001)	Brand attitude	Yes	No	No
Pauwels et al. (2004)	Promotions and new products	Yes	No	No
Fornell et al. (2006)	Customer satisfaction	Yes	Yes	No
Madden, Fehle, and Fournier (2006)	Brand equity	Yes	Yes	No
Luo (2007)	Consumer negative voice	Yes	No	No
McAlister, Srinivasan, and Kim (2007)	Advertising	No	Yes	No
Sorescu, Shankar, and Kushwaha (2007)	New products	Yes	No	No
Tellis and Johnson (2007)	Perceived quality	Yes	No	No
Mizik and Jacobson (2008)	Brand attributes	Yes	No	No
Sorescu and Spanjol (2008)	Innovations	Yes	No	No
Luo and Bhattacharya (2009)	Corporate social responsibility	No	Yes	Yes
Srinivasan et al. (2009)	Marketing mix and asset metrics	Yes	No	No
Joshi and Hanssens (2010)	Advertising	Yes	No	No
This study	DTCA and DTP	Yes	Yes	Yes

Notes: Sorescu and Spanjol (2008) assess the impact of marketing variables on total risk but not on each component.

FIGURE 1
Research Framework


Firm Marketing Actions
Advertising (e.g., DTCA)
Promotions (e.g., DTP)
Firm Financial Performance
Abnormal Returns
Business results, marketing signals
Systematic Market Risk
The part of risk explained by changes in average market portfolio returns (β)
Idiosyncratic Risk
The part of risk that cannot be explained by changes in average market portfolio returns
Joshi and Hanssens (2010), Advertising Impact
Pauwels et al (2004), Promotions Impact
Srinivasan et al (2009), Advertising and Promotions Impact
McAlister et al (2007), Advertising Impact
Fornell et al (2006), Customer Satisfaction Impact
This Study, Advertising and Promotions Impact on Returns, Systematic Risk and Idiosyncratic Risk

tising may have a relatively large number of individual stockholders whose buy and sell decisions would be less coordinated (Xu and Malkiel 2003) This scenario could reduce systematic risk Indeed, executives value individual investors for their stability and long-term investment objectives (Vogelheim et al 2001)

Overall, we suggest that the collective benefits of advertising insulate a firm's stock from market downturns and thus lower its systematic risk (Veliyath and Ferris 1997) Because stockholders typically do not have detailed DTP expenditures information, we do not expect any changes in systematic risk due to changes in DTP Therefore, we propose the following

H_4 DTCA lowers systematic risk

H_5 DTP marketing has no effect on systematic risk

Marketing Expenditures and Idiosyncratic Risk

Although DTCA may have a favorable effect on two components of firm value—returns and systematic risk—it does not necessarily favor all components Specifically, critics argue that DTCA provides "incomplete and biased information, leads to inappropriate prescribing, increases costs as a result of the added costs of advertising, and consumes time in the physician–patient encounter" (Parnes et al 2009, p 2) The effects of DTCA might be negative because the advertisements are legally required to mention the negative side effects of the advertised drug (Wosinska 2005) As a relatively new phenomenon in the context of pharmaceuticals, with potentially mixed effects, it may be difficult for investors to judge the sales effects of DTCA Furthermore, the lack of substantial sales response effects of DTCA may cause an increase in firm-specific risk Because DTCA serves as an informational mechanism for individual investors about such things as new product launches, it should enhance, or reactivate, investor awareness This may cause individual investors to pay more attention to firm-specific news, such as clinical concerns, which would result in a stronger investor response to company news about stock returns—that is, an increase in idiosyncratic risk This effect is different from the one described for systematic risk, for which we hypothesize that the firm's increased salience among individual investors enhances their propensity to buy the firm's stock, leading to a larger degree of individual investor ownership, which in turn should reduce systematic risk In the case of idiosyncratic risk, we argue that existing stockholders' awareness may be enhanced, or reactivated, thereby leading to a greater impact of company-specific news. Moreover, DTCA may increase risk because the advertisements are required to mention the side effects. It must be noted that the two hypothesized effects do not contradict each other. The stock price may move up or down with the market and, on top of that, display larger fluctuations because of the firm-specific news. We do not expect changes in idiosyncratic risk as a result of changes to DTP, because investors do not directly observe DTP expenditures and DTP marketing has long been in use as a proven communication vehicle in the pharmaceutical industry. Therefore, we hypothesize the following:

H_6: DTCA increases idiosyncratic risk.

H_7: DTP marketing has no effect on idiosyncratic risk.

Research Design and Methodology

Model Specification

To assess the impact of marketing expenditures on returns and systematic and idiosyncratic risk, we develop a dynamic model that we estimate using Kalman filtering. As a starting point, we use Carhart's (1997) four-factor model, which Luo and Bhattacharya (2009), Sood and Tellis (2009), and Sorescu, Shankar, and Kushwaha (2007), among others, have applied to a marketing context. The model extends the well-known capital asset pricing model (CAPM) and explains a firm's return premium, which is the difference between the firm's return R and the return on a risk-free investment R_{rf}, according to (1) the excess market return, $R_m - R_{rf}$, where R_m is the market return, (2) the difference between the return on a portfolio of small firms and that of large firms (small minus big, SMB), (3) the difference between the return on portfolios of high versus low book-to-market equity firms (high minus low, HML), and (4) a momentum factor, defined as the difference in the return between portfolios of firms with high versus low prior returns (up minus down, UMD). Carhart (1997) shows that this four-factor model captures known anomalies in excess returns. For firm i at time t, the four-factor model is as follows:

$$(1)\qquad (R_{it} - R_{rft}) = \beta_{0i} + \beta_{1i}(R_{mt} - R_{rft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}UMD_t + \varepsilon_{it},$$

where $\varepsilon_{it} \sim N(0, \sigma^2_{\varepsilon_i})$. The parameter β_{0i} captures structural excess returns that should not be present and should be equal to 0 in the case of an efficient market. Short-term excess returns appear in ε_{it}. The parameter β_{1i} measures the firm's systematic risk, and $\sigma^2_{\varepsilon_i}$ is a measure of idiosyncratic risk (Luo and Bhattacharya 2009). The parameter β_{2i} indicates the extent to which the firm's stock returns move with those from a portfolio of small stocks (higher value for β_{2i}) or those from large stocks (lower value for β_{2i}); similarly, β_{3i} takes on a higher value when the stock returns show more correspondence with those from high book-to-market equity firms and lower values when they are closer to the returns from low book-to-market equity firms. Finally, β_{4i} indicates the extent to which the stock returns correspond to those from firms that performed well in the previous period; therefore, when a firm's stock has momentum, we expect a positive, significant estimate for β_{4i}.

Marketing expenditures and levels of stock returns. To test our hypotheses regarding the effects of DTCA and DTP expenditures on stock returns, we extend Equation 1 to include measures of DTCA and DTP. In addition, we include revenues (REV), profits (PROFIT), and R&D expenditures (RD). These additions help distinguish between direct effects from marketing expenditures and indirect effects that run through these other variables (Joshi and Hanssens 2010; Srinivasan et al. 2009). We do not include competitive variables, because not only pharmaceutical manufacturers compete for investors' dollars. Following Aaker and Jacobson (1994, 2001) and Srinivasan and colleagues (2009), we assume that shareholders only respond when new and unexpected information becomes available (Fama 1970). We do not observe these data but define unanticipated changes (U) through first-order autoregressive models as described in detail in the "Data" section. However, in the case of DTCA, we make an exception. Because shareholders observe DTCA not only in the firms' profit-and-loss statements but also as consumers, we include this variable in both unexpected shocks and levels, operationalized through a stock variable DTCAS, to capture another important difference in the possible effects of DTCA and DTP. Specifically, the timing of information release to investors is continuous and repetitive in the case of DTCA but discrete for DTP. To test H_2, we include a dummy variable multiplied by DTCA levels because these, and not the unexpected changes, are likely to drive the firm's salience for individual investors.

Marketing expenditures and systematic and idiosyncratic risk. To test our hypotheses regarding the relationship between DTCA and DTP and the two types of risk, we specify how dynamic risk measures evolve over time and how the marketing expenditures influence these movements. Ghysels (1998) argues that systematic risk changes slowly over time and that an overly volatile measure might lead to worse predictions than a model with a static effect. Building on well-accepted financial models, Braun, Nelson, and Sunier (1995) model systematic and idiosyncratic risk with first-order autoregressive processes and obtain carryover parameters that tend to be close to unity, indicating that the risk components follow a smooth pattern over time. Similarly, using a nonparametric approach, Cai (2007) demonstrates that the pattern of systematic risk over time is smooth. A further indication of the general lack of volatility in the risk parameters is the frequency with which the CAPM and four-factor model are estimated over long data windows. For example, Carhart (1997) uses 30 years of data with differing portfolios, and McAlister, Srinivasan, and Kim (2007) use 5-year windows of firm-level data to estimate CAPMs.

Following Braun, Nelson, and Sunier (1995), we base our specifications for systematic and idiosyncratic risk on autoregressive processes. We incorporate unexpected changes in DTCA and DTP, as well as revenues, profits, and R&D expenditures, as exogenous variables in these specifications We also include the DTCA stock variable, as we did for the levels of returns In the case of idiosyncratic risk, we do not add an error term to the equation, which would make the estimation rather more difficult[2] Instead, our specification of idiosyncratic risk is a deterministic version of the stochastic volatility model, which has a strong theoretical foundation in finance literature (Durbin and Koopman 2001) This model consists of a series with mean 0, the exponent of which we multiply by a scaling parameter κ

To fine-tune the optimal size of the carryover parameters and the order of the autoregressive processes, we test three alternative specifications (1) a first-order autoregressive process, (2) a second-order autoregressive process, and (3) a random walk specification, with carryover parameters equal to 1 The estimation of our full model using the first- and second-order autoregressive models indicates that the carryover parameters only just lie within the unit circle, similar to the results Braun, Nelson, and Sunier (1995) provide Therefore, it is no surprise that the more parsimonious random walk specification fits even better, as indicated by the Bayesian and corrected Akaike information criteria (BIC and AIC$_c$, respectively) Therefore, we proceed with the parsimonious random walk specification

Pooling Because of the many parameters in our model and the modest number of observations available per firm, we cannot estimate the model at the individual firm level Instead, we partially pool monthly data from different firms in our sample, similar to Joshi and Hanssens (2010), who pool quarterly data in their analysis To accommodate firm-level heterogeneity, we include firm-specific intercepts, systematic risk, and idiosyncratic risk measures Because we study firms in the same industry, it is likely that there are factors that affect all firms in the same direction, though not necessarily to the same extent[3] Examples of such factors include new legislation, epidemics, and new technology available to all firms Therefore, we specify a full covariance matrix, allowing the errors of the different firms to be contemporaneously correlated[4]

Our final model consists of three parts (Equations 2a–2d) For firm $i = 1,\ ,8$, at time t, we have the following

Levels of Returns

$$\text{(2a)}\quad \begin{aligned}(R_{it} - R_{rf,t}) = {} & \beta_{0i} + \beta_{1it}(R_{mt} - R_{rf,t}) + \beta_2 SMB_t + \beta_3 HML_t \\ & + \beta_4 UMD_t + \gamma_1 DTCAS_{it}(1 - D_t) + \gamma_2 DTCAS_{it} D_t \\ & + \gamma_3(U)DTCA_{it} + \gamma_4(U)DTP_{it} + \gamma_5(U)REV_{it} \\ & + \gamma_6(U)PROFIT_{it} + \gamma_7(U)RD_{it} + \varepsilon_{it},\end{aligned}$$

where $\varepsilon_{it} \sim N(0, \sigma^2_{\varepsilon_{it}})$ such that the correlation between ε_{it} and ε_{jt}, $j \neq i$ is equal to ρ_{ij} and where D_t is a dummy variable that takes the value 1 in the periods directly following the regulation relaxation and 0 otherwise

Systematic Risk

$$\text{(2b)}\quad \begin{aligned}\beta_{1it} = {} & \beta_{1it-1} + \varphi_1 DTCAS_{it} + \varphi_2(U)DTCA_{it} + \varphi_3(U)DTP_{it} \\ & + \varphi_4(U)REV_{it} + \varphi_5(U)PROFIT_{it} + \varphi_6(U)RD_{it} + \eta_{it},\end{aligned}$$

where $\eta_{it} \sim N(0, \sigma^2_\eta)$

Idiosyncratic Risk

$$\text{(2c)}\quad \sigma^2_{\varepsilon_{it}} = \kappa_i \exp(h_{it}),$$

where κ_i is the firm-specific scaling parameter, and

$$\text{(2d)}\quad \begin{aligned}h_{it} = {} & h_{it-1} + \lambda_1 DTCAS_{it} + \lambda_2(U)DTCA_{it} + \lambda_3(U)DTP_{it} \\ & + \lambda_4(U)REV_{it} + \lambda_5(U)PROFIT_{it} + \lambda_6(U)RD_{it}\end{aligned}$$

In Equations 2a–2d, the β parameters correspond to the four-factor model from Equation 1, and we note that β_{1it} and $\sigma^2_{\varepsilon_{it}}$ include subscript t to allow for time-varying systematic and idiosyncratic risk The γ parameters indicate the effects of the marketing, R&D, and firm performance variables on returns The effects of these variables on systematic and idiosyncratic risk are given by the φ and λ parameter sets, respectively Firm-specific effects are accommodated through the firm-specific intercepts β_{0i}, the firm-specific error variance scaling parameters κ_i, and the initial values of the systematic risk series β_{1i0}

Model Estimation

We estimate our model with Kalman filtering, as has been applied previously in marketing contexts by, among others, Naik, Mantrala, and Sawyer (1998), Naik and Raman (2003), and Osinga, Leeflang, and Wieringa (2010) in their efforts to model advertising and promotion effects over time and by Xie and colleagues (1997) and Van Everdingen, Aghina, and Fok (2005) to model diffusion processes using an augmented version with continuous states For example, Van Heerde, Mela, and Manchanda's (2004) and Ataman, Mela, and Van Heerde's (2008) applications of the Bayesian dynamic linear model are related closely to the Kalman filter methodology as well Our model is linear and Gaussian, so we apply classical Kalman filtering, which is substantially faster than the Bayesian approach

To apply this method, we first write our model in state-space form and specify it in terms of observation and transition equations The transition equations describe how the time-varying parameters evolve over time and link to the endogenous variable using the observation equations (Durbin and Koopman 2001, Naik, Mantrala, and Sawyer 1998) We can rewrite Equations 2a–2d in state-space form using the observation equations

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[2] Because our results indicate a small variance for the error term related to systematic risk, we do not regard this omission as a major limitation of our model

[3] We thank an anonymous reviewer for suggesting this

[4] Allowing for correlated errors in the equation for systematic risk, η_{it}, does not improve model fit

$$\text{(3a)}\quad \begin{bmatrix} (R_{1t}-R_{rf,t}) \\ (R_{2t}-R_{rf,t}) \\ \\ (R_{8t}-R_{rf,t}) \end{bmatrix}$$

$$= \begin{bmatrix} (R_{mt}-R_{rf,t}) & 0 & 0 \\ 0 & (R_{mt}-R_{rf,t}) & 0 \\ \\ 0 & 0 & (R_{mt}-R_{rf,t}) \end{bmatrix} \begin{bmatrix} \beta_{1,1t} \\ \beta_{1,2t} \\ \\ \beta_{1,8t} \end{bmatrix}$$

$$+ \begin{bmatrix} 1 & 0 & 0 & SMB_t & (U)RD_{1t} \\ 0 & 1 & 0 & SMB_t & (U)RD_{2t} \\ \\ 0 & 0 & 1 & SMB_t & (U)RD_{8t} \end{bmatrix} \begin{bmatrix} \beta_{0,1} \\ \beta_{0,2} \\ \\ \beta_{0,8} \\ \beta_2 \\ \\ \gamma_7 \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \\ \varepsilon_{8t} \end{bmatrix}$$

and the transition equations

$$\text{(3b)}\quad \begin{bmatrix} \beta_{1,1t} \\ \beta_{1,2t} \\ \\ \beta_{1,8t} \end{bmatrix} = \begin{bmatrix} \beta_{1,1t-1} \\ \beta_{1,2t-1} \\ \\ \beta_{1,8t-1} \end{bmatrix}$$

$$+ \begin{bmatrix} DTCAS_{1t} & (U)DTCA_{1t} & (U)RD_{1t} \\ DTCAS_{2t} & (U)DTCA_{2t} & (U)RD_{2t} \\ \\ DTCAS_{8t} & (U)DTCA_{8t} & (U)RD_{8t} \end{bmatrix} \begin{bmatrix} \varphi_1 \\ \varphi_2 \\ \\ \varphi_6 \end{bmatrix}$$

$$+ \begin{bmatrix} \eta_{1t} \\ \eta_{2t} \\ \\ \eta_{8t} \end{bmatrix},$$

where $\varepsilon_{it} \sim N(0, \sigma^2_{\varepsilon_{it}})$, the correlation between ε_{it} and ε_{jt} is equal to ρ_{ij}, and $\eta_{it} \sim N(0, \sigma^2_{\eta})$

Next, we apply standard Kalman filter routines and use a numerical optimization method for the log-likelihood function to obtain the optimal parameter vector θ (for technical details, see Durbin and Koopman 2001) The parameter vector θ contains β_{0i}, the initial values for β_{1it}, the other β parameters, all γ, φ, and κ parameters, the error variance σ^2_{η}, and correlation coefficients ρ When possible, we use regression coefficients as starting values for the parameters and apply different starting values for the other parameters, where all sets of starting values converge to the same solution We obtain the parameter standard errors from the information matrix evaluated at estimated values (Naik and Raman 2003) We use the smoothed coefficients for β_{1it}, which contain information from all periods Finally, we perform standard diagnostic checks on the standardized one-step forecast errors We test the errors for nonnormality, serial correlation, and nonconstant variance over time (here we test for autoregressive conditional heteroskedasticity)

Data

Our monthly data for 1993–2000 are for the eight largest U S -based drug manufacturers Abbott, Bristol-Myers Squibb (BMS), Johnson & Johnson (J&J), Eli Lilly (Lilly), Merck, Pfizer, Schering-Plough (Schering), and Wyeth [5] For these firms, we have data about all prescription drugs with 2000 annual sales of $25 million or more We did not include GlaxoSmithKline because it likely experienced important merger and acquisition influences, and we excluded Procter & Gamble because of the firm's diverse nature Table 2 lists the definition of the variables and the data sources used

We obtained data from various sources, such as Datastream, COMPUSTAT, Kenneth French's Web site, Scott-Levin, and PERQ/HCI [6] With regard to stock returns, we used the total return index, which assumes that dividends are reinvested to buy additional units of equity We transformed the quarterly profit data to monthly data using revenue-based weights, to assign the quarterly R&D expenditures to months, we evenly distributed the expenditures over the quarter

To measure unanticipated changes in DTCA, we followed Aaker and Jacobson (1994) and Srinivasan and colleagues (2009) and took the residuals of a first-order autoregressive model Because we could observe seasonality, we added monthly dummies to account for seasonality effects However, unlike the two previously mentioned studies, we did not pool the models for the unanticipated changes over the different firms Intuitively, this makes sense because it might be assumed that investors have firm-specific expectations This assertion is confirmed in our subsequent empirical results With regard to H_2, we tested whether the effect of DTCA on stock returns is strongest in the first six months after the regulation relaxation Chemmanur and Yan (2009) consider a one-year period for a large number of firms However, these firms likely did not increase their advertising budgets as abruptly and quickly as pharmaceutical firms In addition, Fehle, Tsyplakov, and Zdorovtsov (2005) show that airing television commercials during Super Bowl broadcasts may increase a firm's stock price, confirming that individual investors have attention-driven buying strategies (Barber and Odean 2008) Therefore, compared with Chemmanur and Yan (2009), we assumed a more rapid effect on the visibility of drug manufacturers to individual investors

For the advertising stock, DTCAS, we used Nerlove and Arrow's (1962) specification, with a square root to capture diminishing returns and a carryover parameter of 75 from Narayanan, Desiraju, and Chintagunta (2004) That is, $DTCAS_{it} = 75DTCAS_{it-1} + \sqrt{DTCA_{it}}$ For the purposes of scaling, we divided the stock variables by 1000

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[5] This is based on total revenues in December 2000 across all products in our database

[6] For Kenneth French's Web site, see http //mba tuck dartmouth edu/pages/faculty/ken french

TABLE 2
Variable Definitions and Sources

Variable	Definition	Source
R	Company return, derived from the total return index	Datastream
R_m	Market return	Kenneth French's Web site
R_{rf}	Return on a risk-free investment	Kenneth French's Web site
SMB	Small-minus-big factor: return difference between portfolios of small and large firms	Kenneth French's Web site
HML	High-minus-low factor: return difference between portfolios of high and low book-to-market equity firms	Kenneth French's Web site
UMD	Up-minus-down factor: return difference between portfolios of firms with high and low prior returns	Kenneth French's Web site
DTCA	Direct-to-consumer advertising	Scott-Levin
DTCAS	Direct-to-consumer advertising stock	Scott-Levin
(U)DTCA	(Unexpected changes in) DTCA	Scott-Levin
(U)DTP	(Unexpected changes in) DTP	Scott-Levin, journal advertising from PERQ/HCI
(U)REV	(Unexpected changes in) revenues	Scott-Levin
(U)PROFIT	(Unexpected changes in) profits (quarterly profit figures are distributed over months using revenue-based weights)	COMPUSTAT
(U)RD	(Unexpected changes in) R&D expenditures(quarterly R&D expenditures are evenly distributed over the quarters' months)	COMPUSTAT

Notes: We omit the firm and time indexes.

Empirical Results

Descriptive Statistics

Table 3 shows summary statistics for the key variables in the study, namely, stock returns and DTCA and DTP expenditures. For DTCA, we only took observations after the regulation relaxation into account to avoid the influence of zero values. Average monthly returns are largest for Lilly, Pfizer, and Schering, though differences from other firms are not significant. Lilly spends the least amount on DTCA and DTP; in contrast, Pfizer and Schering are the largest investors in DTCA, and Pfizer also spends the most on DTP.

Table 4 provides the correlations and variance inflation factors between our model variables. The variance inflation factors are no larger than 2.7, suggesting that multicollinearity among the variables is not a concern.

Main Results

We simultaneously estimated the equations in our dynamic four-factor model (Equations 2a–2d) using data from eight pharmaceutical firms.[7] On average, across firms, our model explains approximately 28.6% of the temporal variation in

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[7] We verified whether the different DTCAS, (U)DTCA, and (U)DTP effects could be disentangled by examining the parameter correlation matrix and found that all cross-correlations are sufficiently low. We also estimated a system of equations with each firm's DTCA expenditures as endogenous variable and obtained similar substantive results. When we tested the standardized one-step forecast errors for normality, serial correlation, and autoregressive conditional heteroskedasticity, we found that they met all standard assumptions. The auxiliary residuals (Durbin and Koopman 2001) indicated two clear outliers, which we controlled for using dummy variables.

TABLE 3
Summary Statistics for Key Variables

	Stock Returns		DTCA		DTP	
Variable	M	SD	M	SD	M	SD
Abbott	1.418	5.581	2.583	2.853	15.797	3.442
BMS	1.696	6.098	6.110	5.121	21.830	4.440
J&J	1.618	6.989	3.548	1.662	17.781	2.981
Lilly	2.294	9.374	1.790	1.732	9.947	2.512
Merck	1.757	8.108	12.927	8.047	23.915	9.693
Pfizer	2.285	7.625	14.729	7.687	58.355	17.319
Schering	2.284	8.366	13.616	10.448	16.507	6.222
Wyeth	1.618	7.966	2.877	1.327	11.175	3.627

Notes: DTCA and DTP expenditures are measured in millions of U.S. dollars. Statistics for stock returns and DTP expenditures are based on 94 observations per firm (two observations per firm are lost because of the dynamics in our model). In the case of DTCA, we focus on all time periods from August 1997, resulting in 41 observations per firm (one observation is lost because of model dynamics).

TABLE 4
Bivariate Correlation Matrix for Model Variables

Variable	1	2	3	4	5	6	7	8	
1 $R - R_{rf}$	1								
2 SMB	17	1							
	(00)								
3 HML	– 57	– 64	1						
	(00)	(00)							
4 UMD	24	49	– 57	1					
	(00)	(00)	(00)						
5 DTCAS × (1 – D)	– 01	– 03	– 02	06	1				
	(86)	(44)	(61)	(13)					
6 DTCAS × D	– 03	– 06	07	– 08	15	1			
	(44)	(10)	(04)	(03)	(00)				
7 (U)DTCA	09	– 05	– 10	05	09	– 03	1		
	(01)	(16)	(01)	(16)	(02)	(42)			
8 (U)DTP	13	– 11	– 09	05	04	03	41	1	
	(00)	(00)	(01)	(14)	(29)	(40)	(00)		
9 (U)REV	02	02	– 05	01	04	02	03	03	1
	(67)	(52)	(19)	(88)	(25)	(67)	(38)	(42)	
10 (U)PROFIT	– 06	– 03	05	– 01	13	01	05	01	0
	(10)	(47)	(14)	(70)	(00)	(70)	(17)	(72)	(7
11 (U)RD	– 03	01	05	– 04	– 22	– 02	– 01	02	0
	(34)	(72)	(14)	(33)	(00)	(62)	(81)	(58)	(2

Notes Numbers in parentheses are *p*-values The number of observations equals 752 Two observations per firm are lost because of the dynam firms' stock returns Table 5 presents the results for Equation 2a, though without the systematic risk coefficients, which we discuss in detail together with the results for Equation 26

From Table 5, we conclude that the constants are positive for all firms, and four of the eight constants are significant at least at $p < 05$ Therefore, these four firms seem to outperform the market systematically in our data window With regard to SMB and HML, we find significant and negative signs ($p < 01$ and $p < 05$, respectively) From the SMB coefficient, we can infer that the (typically large) pharmaceutical firms' stock returns show more correspondence with those of large firms The negative sign of the HML variable indicates that the stock returns move together with low book-to-market equity firms The momentum factor (UMD) is insignificant and in line with Fama and French's (1996) question about whether the momentum effect is real and their call for more empirical verification of momentum (see also Srinivasan and Hanssens 2009) We cannot directly confirm H_1, because we do not find a significant effect of DTCA on stock returns for unexpected changes or the stock variable In the months directly following the regulation relaxation, DTCA had a significantly stronger positive effect, in support of H_2 Not only is the effect in this time window stronger than in other months, but DTCA also significantly increases stock returns ($p < 05$), providing partial support for H_1 These results are in line with Chemmanur and Yan (2009), who find that advertising can help attract investors' attention but that the effect may diminish in the long run because of advertising wear-out or possibly saturation The significant ($p < 05$) and positive value for the coefficient of unexpected changes in DTP on stock returns conflicts with H_3 This implies that investors do observe and value higher-than-expected DTP expenditures Therefore, it is plausible that large investors rely more on data from companies such as IMS to track DTP expenditures than we concluded from our discussions with these data providers

TABLE 5
Estimation Results for Returns

	Parameter Value	SD
Constant Abbott	1 015**	516
Constant BMS	908*	534
Constant J&J	1 131*	591
Constant Lilly	2 058**	889
Constant Merck	1 256*	702
Constant Pfizer	1 754***	675
Constant Schering	1 492**	718
Constant Wyeth	973	654
SMB	– 673***	148
HML	– 429**	195
UMD	– 031	116
DTCAS × (1 – D)	– 049	064
DTCAS × D	323**	145
(U)DTCA	024	072
(U)DTP	139**	065
(U)REV	033*	019
(U)PROFIT	001	003
(U)RD	– 003	021

*$p < 1$
**$p < 05$
***$p < 01$

We provide the time-varying systematic and idiosyncratic risk measures in Figures 2 and 3, respectively For all firms, systematic risk is far lower at the end of the second regime than it is in the first regime In most cases, systematic risk even falls below 0 This finding suggests that fluctuations in the returns of these firms move contrary to fluctuations in market returns Figure 3 displays an opposite pattern Idiosyncratic risk increases over time for all firms The fall and rise of systematic and idiosyncratic risk, respectively, are most severe after DTCA regulations were relaxed

Table 6 presents the parameter estimates and standard deviations for Equation 2b The initial values of systematic risk are lower than 1 for six of the eight firms Systematic risk lower than 1 indicates that the stock's return goes up

FIGURE 2
Systematic Risk over Time

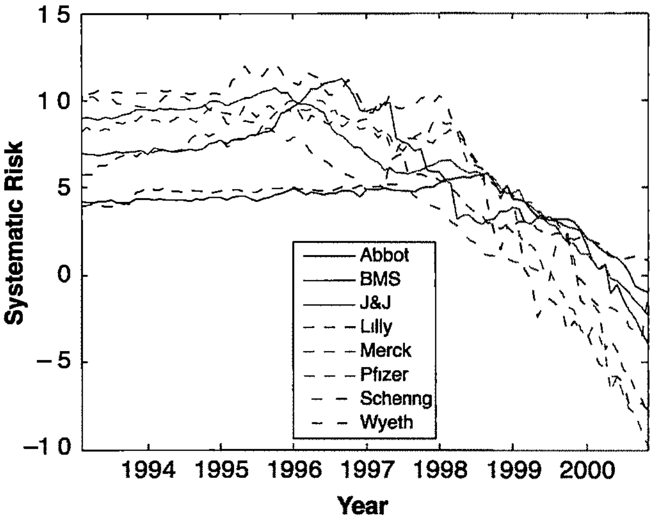

FIGURE 3
Idiosyncratic Risk over Time

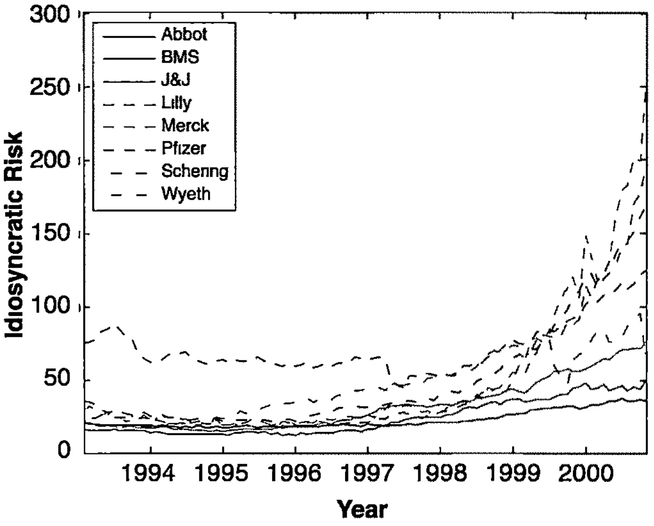

TABLE 6
Estimation Results for Systematic Risk

	Parameter Value	SD
Initial systematic risk Abbott	419**	156
Initial systematic risk BMS	698**	207
Initial systematic risk J&J	897**	208
Initial systematic risk Lilly	394	270
Initial systematic risk Merck	573	489
Initial systematic risk Pfizer	826**	319
Initial systematic risk Schering	1 025**	283
Initial systematic risk Wyeth	1 013**	293
DTCAS	– 003**	001
(U)DTCA	– 011*	006
(U)DTP	003	008
(U)REV	– 001	002
(U)PROFIT	000	000
(U)RD	– 001	002
Variance error term	001	001– 001

*$p <$ 05
**$p <$ 01
Notes For the error variance, we give 95% confidence intervals instead of a standard deviation

TABLE 7
Estimation Results for Idiosyncratic Risk

	Parameter Value	SD
DTCAS	003**	000
(U)DTCA	– 001	006
(U)DTP	016*	008
(U)REV	– 003	002
(U)PROFIT	000	000
(U)RD	001	001
Scaling parameter Abbott	20 304	14 947 27 580
Scaling parameter BMS	15 602	10 757 22 628
Scaling parameter J&J	20 885	14 727 29 619
Scaling parameter Lilly	77 264	52 398 113 929
Scaling parameter Merck	35 558	18 483 68 408
Scaling parameter Pfizer	29 621	18 894 46 436
Scaling parameter Schering	21 550	14 785 31 411
Scaling parameter Wyeth	18 081	11 178 29 248

*$p <$ 1
**$p <$ 01
Notes For the scaling parameters, we give 95% confidence intervals instead of a standard deviation We transform these parameters in the estimation process to ensure that they meet the requirement of being strictly positive The transformation also explains the asymmetric confidence intervals

(down) to a lesser extent than the market when it goes up (down) Furthermore, we conclude that the DTCA stock and the unexpected changes in DTCA have a significant ($p <$ 01 and $p <$ 05, respectively) and negative effect on systematic risk, in support of H$_4$ We also find support for H$_5$ because there are no changes in systematic risk due to unanticipated changes in DTP expenditures

The parameter estimates for Equation 2c–2d in Table 7 reveal a highly significant ($p <$ 01) and positive estimate for the stock of DTCA, in support of the hypothesized effect of DTCA on idiosyncratic risk (H$_6$) In contrast with H$_7$, we find that unexpected changes in DTP expenditures tend to have a significant and positive effect on idiosyncratic risk ($p <$ 1), indicating that unanticipated rises in DTP expenditures lead to more uncertainty about the firm's stock price We further note that the values of the scaling parameters for idiosyncratic risk greatly vary across firms, with a particularly high value for Lilly

Our empirical findings support our DTCA-related hypotheses However, the hypotheses regarding the effects of DTP expenditures on returns and idiosyncratic risk—H$_3$ and H$_7$, respectively—receive no support, though it must be noted that the effect on idiosyncratic risk is significant only at the 10% level The results indicate that investors do observe physician-directed efforts and that unanticipated shocks in these efforts simultaneously increase stock returns and raise idiosyncratic risk We summarize and compare our outcomes with those of McAlister, Srinivasan, and Kim (2007) and Joshi and Hanssens (2010) in Table 8, we confirm McAlister, Srinivasan, and Kim's (2007) findings about the effects of DTCA on systematic risk, and we

TABLE 8
Overview of Empirical Support for Conceptual Framework

	Supported?		
Hypotheses	**McAlister, Srinivasan, and Kim (2007)**	**Joshi and Hanssens (2010)**	**This Study**
Stock Returns			
H$_1$ DTCA increases stock returns	—	Yes	Partial
H$_2$ The effect of DTCA on stock returns is strongest directly after the regulation relaxation	—	—	Yes
H$_3$ DTP has no effect on stock returns	—	—	No
Systematic Risk			
H$_4$ DTCA lowers systematic risk	Yes	—	Yes
H$_5$ DTP has no effect on systematic risk	—	—	Yes
Idiosyncratic Risk			
H$_6$ DTCA increases idiosyncratic risk	—	—	Yes
H$_7$ DTP has no effect on idiosyncratic risk	—	—	No

Notes "—"denotes that the effect is not investigated find partial support for the effect on returns, as Joshi and Hanssens's (2010) study indicates.

Robustness Checks and Relevance of the Effects

In our empirical analysis, we performed several robustness checks. First, we tested whether a higher-order model to determine the unanticipated changes leads to a better fit of the full model (Equations 2a–2d). Both the BIC and AIC_c indicate that the model fit does not improve when we increase the number of lags. From a substantive point of view, the results are robust, apart from H_7, which we cannot reject; in other words, the effect of (U)DTP on idiosyncratic risk is no longer significant when we assume a lag length exceeding three. Second, we also tested whether our results are robust to including year dummies in the unanticipated changes equations (Aaker and Jacobson 1994). Again, we found that all our conclusions hold except for the effect of (U)DTP on idiosyncratic risk, which is not significant. We expected a stronger effect in the months following the regulation relaxation. To test the sensitivity of our results to the assumption of a time window of six months, we estimated our model assuming windows of three to nine months. We obtained similar substantive results in all cases. The findings in Table 8 do not change. Finally, to test the sensitivity to the assumption of a DTCA stock carryover parameter of .75, we estimated the model assuming carryover parameter values in the range of .6 and .9, with a step size of .05 and again found the results, including those reported in Table 8, to be robust.

To explicate the relevance of our results, we first assessed the changes in the percentage of variance explained by estimating our model without the DTCA variables and then without the DTP variables. The model without the DTCA variables has an R-square of .236, or a decline of 17.4% in explanatory power compared with the full model (Equations 2a–2d). Therefore, we conclude that DTCA plays an important role in explaining firm stock returns. However, the explanatory power of the model without the DTP components declines only marginally; that is, with an R-square of .280, the percentage of variance explained decreases by only 2.3%. Although it is significant, DTP expenditures are far less important for explaining stock returns than DTCA. In addition, we assessed the contribution of each of the hypothesized effects to the model fit.[8] Comparison of these fit statistics with those for the full model indicate that the effects of DTCA on systematic and idiosyncratic risk, as related to H_4 and H_6, respectively, contribute most to the model fit.

Managerial Implications

Our study offers several managerial implications. Managers who evaluate marketing expenditures should consider the effects of marketing on all stakeholders, not just consumers, which should significantly influence the size and allocation of the marketing budget. We illustrate this through a scenario analysis that indicates the consequences of a change in DTCA expenditures on stock returns and risk. Existing research indicates that at least some expenditures on DTCA may be better allocated elsewhere (e.g., Law, Majumdar, and Soumerai 2008).

We calculated the stock return and risk impact when there was a 20% decrease in DTCA expenditures for all periods from August 1997, the month of the regulation relaxation, to December 2000. This decrease affected both the advertising stock variable and the unexpected changes in advertising variable. We retained all other variables at their original levels and took both significant and insignificant variables into account. We assessed the short- and long-term financial consequences of a decrease in DTCA. These are defined, respectively, as the first six months following the relaxation of the regulation and all periods from August 1997 to December 2000. We determined the percentage change in cumulative returns over the time window considered, and for systematic and idiosyncratic risk, we evaluated the change and percentage change, respectively, in the final period of the considered time window compared with the original situation.

Our results show that, on average, the decrease in DTCA expenditures decreases cumulative returns by 5.3% and increases systematic risk by only .01 in the short run. Across firms, idiosyncratic risk is .3% lower than in the original situation. However, this does not affect investors who hold a well-diversified portfolio. In the long run, the negative effect on cumulative returns dissipates because of the insignificant but negative effect of DTCA on returns (DTCAS parameter = –.049). However, the effect on systematic risk is more severe, with an average increase of .14. Idiosyncratic risk drops 10.5%. Our results indicate that a reduction in DTCA expenditures predominantly affects returns in the short run, whereas the effect on systematic risk is more pronounced in the long run.

A possible explanation for this finding is that in the short run, DTCA enhances the firms' prospects as well as the salience for individual investors. In turn, this increases the demand for the firms' stocks. In the long run, more stable cash flows and a more diversified investor base (i.e., less coordinated buying and selling decisions) lead to lower systematic risk. A consideration of sales effects alone likely would lead to a decrease in DTCA expenditures (see Kremer et al. 2008). Given the strong DTCA effects on shareholder value, this decrease would be detrimental from a shareholder's point of view. Thus, DTCA and DTP serve different goals, and both components should be integral parts of an overall marketing communication strategy.

Conclusions, Limitations, and Further Research

We study the effects of DTCA and DTP expenditures for pharmaceuticals. Relying on Kalman filtering, we demonstrate that marketing expenditures with limited sales effects can influence the three components of shareholder value: stock returns, systematic risk, and idiosyncratic risk.

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[8] We estimated models leaving out the effects described in the specific hypothesis and determined BIC and AIC_c statistics. We thank an anonymous reviewer for suggesting this analysis. A table with BIC and AIC_c values is available on request from the first author.

We demonstrate that DTCA not only increases stock returns but also decreases systematic risk These outcomes are comparable to Fornell and colleagues' (2006) findings regarding the relationships among customer satisfaction, risk, and return Moreover, we found that DTCA increases idiosyncratic risk, though we note that this increase does not affect investors who maintain a well-diversified portfolio The increase in idiosyncratic risk likely occurs because investors perceive DTCA as a risky investment It is also plausible that investors become more involved with the company, which would lead to a stronger response to company-specific news Whereas previous research has focused primarily on the levels of returns, we uncover important relationships among strategic marketing variables, including DTCA, DTP, levels of stock return, and the two components of risk Thus, our study highlights the strategic importance of DTCA, which increases returns and reduces systematic risk, thus enhancing long-term shareholder wealth The impact of advertising on stock performance is indicative of market inefficiency and enables firms to beat competition in offering superior shareholder value[9] In turn, this effect helps shape the perspective of finance managers who are concerned about the uncertain impact of DTCA, given its moderate sales impact A key managerial implication is that firms should strike a balance in their DTCA expenditures to optimize the net benefits from a shareholder perspective

Our study has several limitations First, we rely on aggregate data More accurate results might be obtained by surveying investors to determine how marketing activities (e g , DTCA, DTP) influence their behavior Second, we use autoregressive models to determine unanticipated changes in the variables A fruitful research avenue would be to assess how investors form expectations and how these expectations can be captured when using aggregate data Third, we do not take into account the rise of Web trading, which overlaps with our data window For example, Schwab's Web trading service went live in 1996 (Charles Schwab Corporation 2009) Easy access to the stock market for individual investors may have reinforced DTCA effects, that is, a firm's increased salience for individual investors due to DTCA better translates into shareholder value because of easy access to the stock market

We identify several additional directions for further research First, an extension of our findings to other industries and in both business-to-business and business-to-consumer contexts would reinforce our conclusions To the extent that investors directly observe advertising, our approach is suitable in both contexts Because investors might directly observe promotional efforts in a business-to-consumer context and their effects might only become clear from the company's books in a business-to-business context, it is important to determine how the stock market effects differ across contexts Second, additional research should distinguish between the impact of DTCA for firms that introduce many new products and those that mainly use DTCA to support existing brands Third, researchers could attempt to disentangle the effects of DTCA for ethical drugs with large versus small market potential, incorporating the company's product portfolio composition into their analyses Fourth, insights into the relationship between marketing investments and their ultimate effect on shareholder value might be improved by including intermediate customer mind-set metrics, such as brand awareness and brand liking (Srinivasan, Vanhuele, and Pauwels 2010), and marketing asset metrics, such as customer equity and brand equity Finally, a challenge for further research would be to develop a structural model of a firm's marketing actions and investor behavior In summary, our work contributes to ongoing efforts, of practitioners and academics alike, by underscoring the importance of assessing the contribution of the marketing actions in light of their impact on the firm's ultimate goal of maximizing shareholder wealth

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[9] We thank an anonymous reviewer for bringing this to our attention

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U S Postal Service Statement of Ownership, Management, and Circulation (Required by 39 U S C 3685)

1 Title of Publication *Journal of Marketing*
2 Publication No 0022-2429
3 Filing Date October 1 2010
4 Issue Frequency Bimonthly (January March, May July, September and November)
5 No of Issues Published Annually 6
6 Annual Subscription Price $130
7 Complete Mailing Address of Known Office of Publication 311 South Wacker Dr Suite 5800, Chicago, IL 60606-2266
8 Complete Mailing Address of the Headquarters or General Business Offices of the Publisher 311 South Wacker Dr, Suite 5800, Chicago, IL 60606-2266
9 Full Names & Complete Mailing Address of Publisher, Editor & Managing Editor Editor Ajay K Kohli Georgia Institute of Technology, College of Management 800 W Peachtree St, NW, Atlanta GA 30308 Managing Editor Christopher Bartone, 311 South Wacker Dr, Suite 5800 Chicago IL 60606-2266
10 Owner American Marketing Association, 311 South Wacker Dr, Suite 5800, Chicago, IL 60606-2266
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12 For completion by nonprofit organizations authorized to mail at special rates The purpose, function,and nonprofit status of this organization and the exempt status for federal income tax purposes Has Not Changed During Preceding 12 Months
13 Publication Name *Journal of Marketing*
14 Issue Date for Circulation Data Below November, 2010
15 Extent and Nature of Circulation

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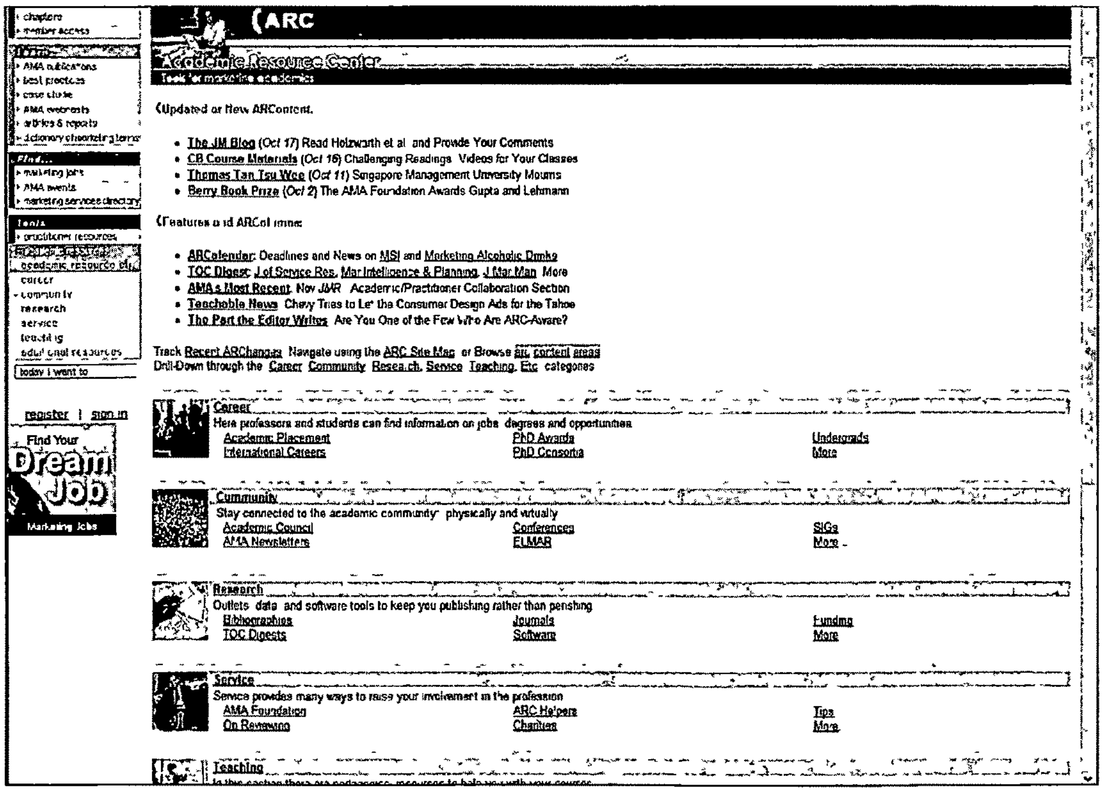

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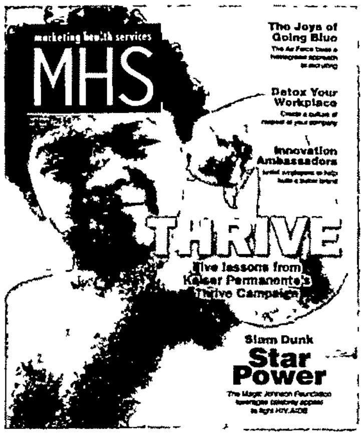

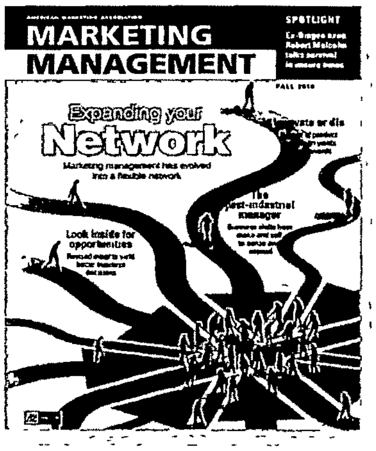

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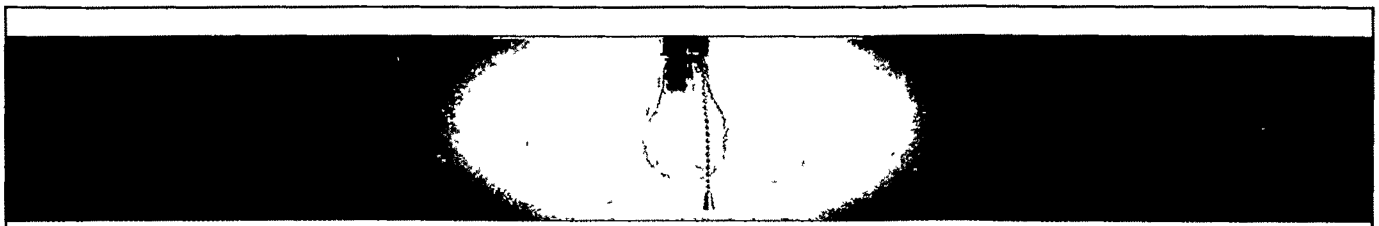

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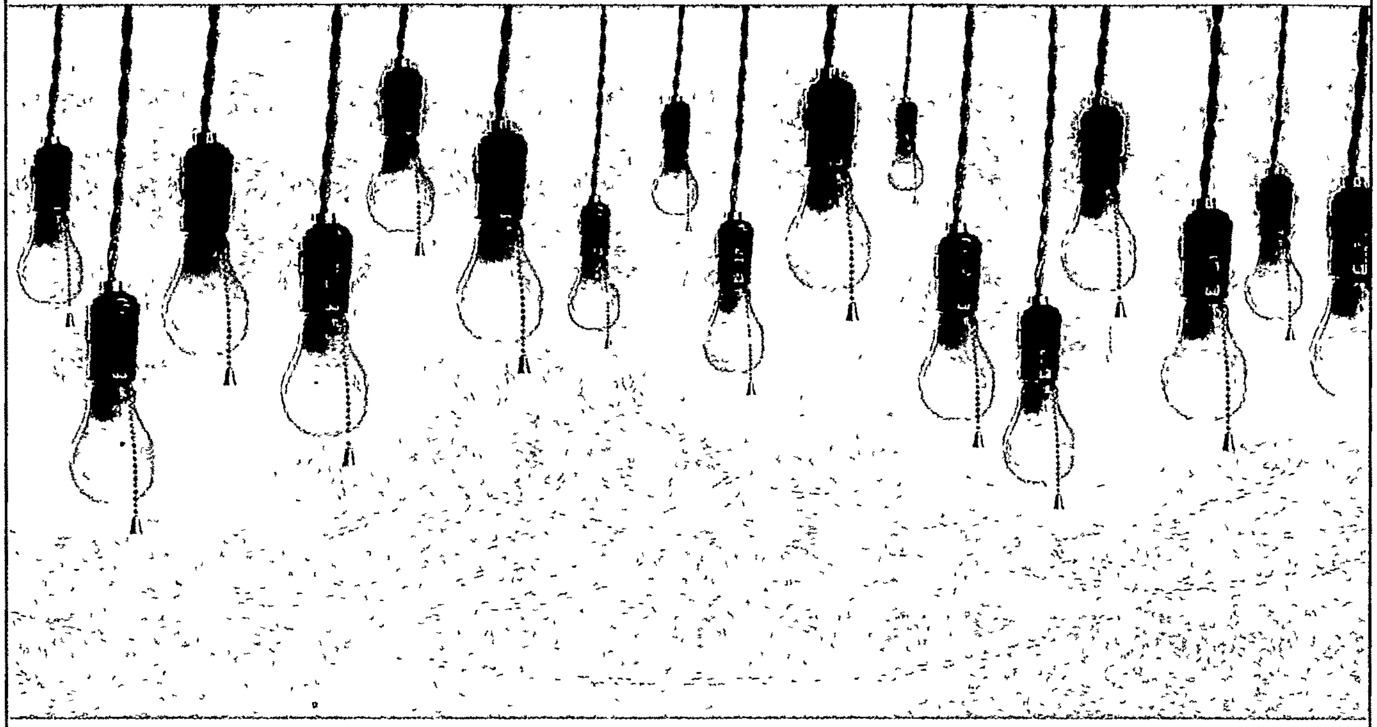

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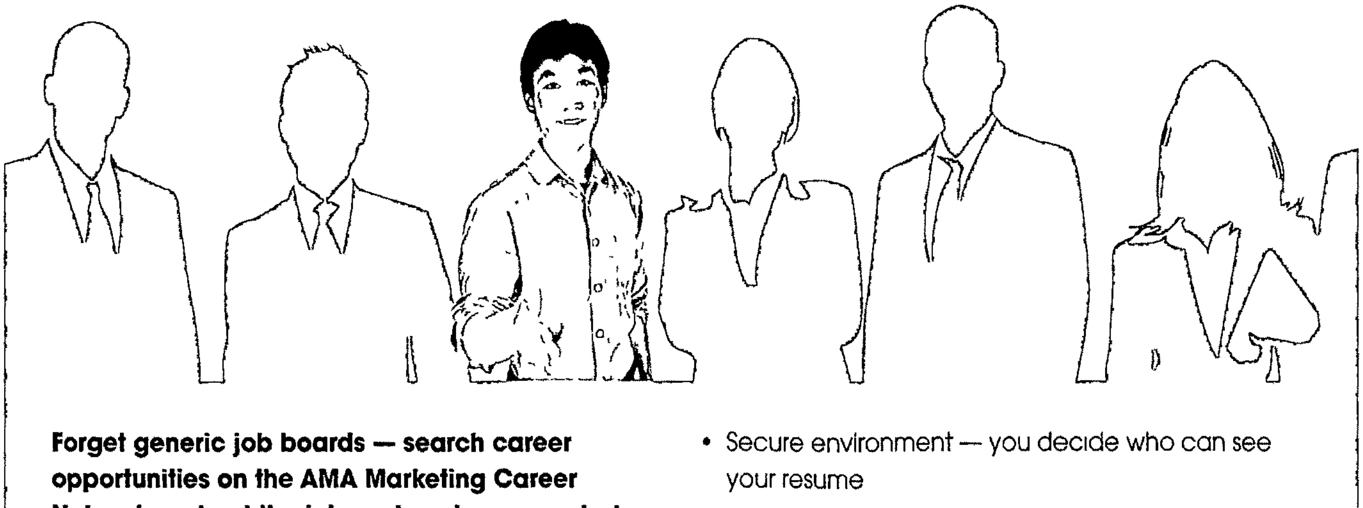

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Journal of Marketing (ISSN 0022-2429) is published bimonthly (January, March, May, July, September, and November) *Annual Subscription Rates* Subscriptions are $135 for individuals in the United States and Canada and $180 in other countries Library, school, and business subscriptions are $375 in the United States and Canada and $410 in other countries Subscriptions for AMA members are $65 Prices are for one year Single copy rate $50 individual, $60 corporate in the United States and Canada, add $5 in other countries Prepayment is required in U S dollars or the equivalent

Published by the Publications Group of the American Marketing Association, 311 S Wacker Dr, Suite 5800, Chicago, IL 60606-2266 Periodicals postage paid at Chicago, IL and additional mailing offices POSTMASTER Send address changes to the *Journal of Marketing*, 311 S Wacker Dr, Suite 5800, Chicago, IL 60606-2266, USA

MANUSCRIPTS Electronic submissions must be made via the *JM* Web site at http //mc manuscriptcentral com/ama_jm Paper submissions are not accepted Editorial policies, review board members, Tables of Contents for *JM*, and so on, are available on the *JM* Web site at http //www marketingpower com/jm

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2010 SHETH FOUNDATION/ *JOURNAL OF MARKETING* AWARD

Stephen L. Vargo and **Robert F. Lusch** are the recipients of the 2010 Sheth Foundation/*Journal of Marketing* Award for their article "Evolving to a New Dominant Logic for Marketing," which appeared in the January 2004 (Vol 68, No 1) issue of the *Journal of Marketing (JM)* The award is administered through the American Marketing Association Foundation

Nominations for the award were solicited from members of the *JM* Editorial Review Board, and a committee of former journal editors—**Roger A. Kerin** (chair), **David W. Stewart**, and **Barton A. Weitz**—made the selection The award is given to honor articles that have made long-term contributions to the discipline of marketing The award recognizes scholarship based on the benefits of time and hindsight and acknowledges contributions and outcomes made to marketing theory and practice This year, the committee considered all articles published in *JM* between 2001 and 2005 The committee also weighs information obtained from nomination letters and citation analyses

The Sheth Foundation/*Journal of Marketing* Award was established through the generosity of the Sheth Foundation The criteria for selection include the quality of the article's contribution to theory and practice, the article's originality, its technical competence, and its impact on the field of marketing Articles eligible for the award must have been published at least five years but not more than ten years earlier

Members of the *JM* Editorial Review Board nominated 12 articles In the opinion of the selection committee, this article has had significant impact in a relatively short time It was originally recognized with the 2004 Harold H Maynard Award and has received an exceptionally high number of citations by Google Scholar (more than 1400) and SSCI counts (approximately 500) As one nomination stated, "This article provides the foundations for developing a general theory of markets and marketing It has profound implications for shaping marketing thought in the 21st century" Another nomination noted, "The Vargo and Lusch paper represents a true paradigm change for the marketing discipline from a marketing focused on goods to one dealing with services They outline very well the historical reasons for this change as well as its fundamental implications on the way our discipline might need to evolve" The committee believes that the significant impact of the article on both scholarly research and marketing practice make it a worthy selection for the Sheth Foundation/*Journal of Marketing* Award

The award was presented at the American Marketing Association's 2011 Winter Marketing Educators Conference, held February 18–20, at the Hilton Austin in Austin, Tex

- Stephen L Vargo is the Shidler Distinguished Professor and Associate Professor of Marketing, Shidler College of Business, University of Hawaii at Manoa
- Robert L Lusch is the James and Pamela Muzzy Chair in Entrepreneurship and McGuire Center for Entrepreneurship Executive Director, Eller College of Management, University of Arizona

2010 HAROLD H. MAYNARD AWARD

Manjit S. Yadav is the recipient of the 2010 Harold H Maynard Award for his article "The Decline of Conceptual Articles and Implications for Knowledge Development," which appeared in the January 2010 (Vol 74, No 1) issue of *Journal of Marketing*

The article was chosen for its significant contribution to marketing theory and thought It was selected according to two rounds of votes cast by members of the *JM* Editorial Review Board, **Alina Sorescu**, Texas A&M University, served as chair

The award was presented at the American Marketing Association's 2011 Winter Marketing Educators' Conference, held February 18–20, at the Hilton Austin in Austin, Tex

- Manjit S Yadav is Professor of Marketing and Mays Research Fellow, Mays Business School, Texas A&M University He also serves as Research Director of the marketing department's Center for Retailing Studies

The runners-up were as follows

- Can Uslay, Z Ayca Altintig, and Robert D Winsor for their article "An Empirical Examination of the 'Rule of Three' Strategy Implications for Top Management, Marketers, and Investors" (March 2010)
- Rajdeep Grewal, Anindita Chakravarty, and Amit Saini for their article "Governance Mechanisms in Business-to-Business Electronic Markets" (July 2010)
- Ashlee Humphreys for her article "Megamarketing The Creation of Markets as a Social Process" (March 2010)
- Madhu Viswanathan, José Antonio Rosa, and Julie A Ruth for their article "Exchanges in Marketing Systems The Case of Subsistence Consumer–Merchants in Chennai, India" (May 2010)

2010 MARKETING SCIENCE INSTITUTE/H. PAUL ROOT AWARD

Amit Joshi and **Dominique M. Hanssens** are the recipients of the 2010 MSI/H Paul Root Award for their article "The Direct and Indirect Effects of Advertising Spending on Firm Value," which appeared in the January 2010 (Vol 74, No 1) issue of *Journal of Marketing*

The article was chosen for its significant contribution to the advancement of the practice of marketing It was selected according to two rounds of votes cast by members of the *JM* Editorial Review Board, **Alina Sorescu**, Texas A&M University, served as chair

The award was presented at the American Marketing Association's 2011 Winter Marketing Educators' Conference, held February 18–20, at the Hilton Austin in Austin, Tex

- Amit Joshi is Assistant Professor of Marketing in the College of Business Administration at the University of Central Florida
- Dominique M Hanssens is the Bud Knapp Professor of Marketing in the Anderson Graduate School of Management at the University of California, Los Angeles

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- Can Uslay, Z Ayca Altintig, and Robert D Winsor for their article "An Empirical Examination of the 'Rule of Three' Strategy Implications for Top Management, Marketers, and Investors" (March 2010)
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- Rik Pieters, Michel Wedel, and Rajeev Batra for their article "The Stopping Power of Advertising Measures and Effects of Visual Complexity" (September 2010)
- Sekar Raju, Priyali Rajagopal and Timothy J Gilbride for their article "Marketing Healthful Eating to Children The Effectiveness of Incentives, Pledges, and Competitions" (May 2010)

Alok Kumar, Jan B. Heide, & Kenneth H. Wathne

Performance Implications of Mismatched Governance Regimes Across External and Internal Relationships

This article examines how a manufacturer's governance of an external supplier relationship affects its performance toward a downstream retail customer In line with sociological and economic theory, a manufacturer's reliance on supplier norms and incentives, respectively, promotes performance However, the performance effect of each external governance mechanism weakens in the presence of a different governance regime within the manufacturer firm itself Specifically, internal incentives weaken the effect of external norms, and internal norms weaken the effect of external incentives From a practical standpoint, these findings point to the difficulty of managing sets of relationships that involve different parties and mechanisms From a theoretical standpoint, they point to the complex interplay between social norms and economic incentives in driving performance outcomes

Keywords governance, interfirm relationships, formal relationships, informal relationships, incompatible governance mechanisms, performance

A manufacturer's relationships with its supply chain partners are important for its overall strategy For example, relationships with upstream suppliers may contribute significantly to a firm's marketing initiatives toward downstream customers However, industry observation suggests that high-performing supply chain relationships do not emerge on their own (Narayanan and Raman 2004) Rather, they require some form of a "visible hand" (Smith 1776), or explicit governance efforts to reduce the friction inherent in interactions between self-interested parties (Williamson 2005)

Prior research has shown the different ways a visible hand can be deployed For example, research grounded in sociological theory and contract law has focused on the use of informal social norms (e g , Heide and John 1992, Noordewier, John, and Nevin 1990) Other lines of research have built on the rational choice tradition from economics to consider the use of formal incentives of various kinds (e g , Bergen, Dutta, and Walker 1992, Lal and Staelin 1986)

According to extant theory, norms and incentives are ideal types of governance mechanisms (Bradach and Eccles 1989, Ouchi 1980), and both are capable in principle of promoting performance However, although much has been learned about governance in recent years, most of the current knowledge is based on the observed effects of particular mechanisms within the context of *individual* relationships Although such a focus is consistent with extant theory, which emphasizes the "transaction" as the unit of analysis (Commons 1934, Williamson 1996), marketing exchanges frequently involve *multiple* relationships that are connected in various ways (Hutt, Reingen, and Ronchetto 1988, Palmatier, Scheer, and Steenkamp 2007)

In this article, our goal is to extend the existing literature on relationship governance in two ways First, we consider the possibility that a manufacturer's governance efforts toward an upstream supplier have performance implications in a downstream customer relationship Specifically, the stronger the norms or incentives in the focal supplier relationship, the closer is the upstream coordination, and the greater is the manufacturer's ability to respond to downstream market conditions From a practical standpoint, this suggests that a firm's dyadic relationship-building efforts are associated with economies that go beyond the dyad in question

Second, we explore whether these performance effects depend on how functional areas and relationships within the manufacturer firm itself are governed Importantly, the processes and workflows that constitute a manufacturer's relationship with an external supplier (e g , product design, delivery) also involve departments and relationships within the firm itself (e g , merchandising, product design, sales)

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ISSN 0022-2429 (print), 1547-7185 (electronic)

These internal relationships and the relevant boundary personnel are also subject to governance mechanisms, such as norms and incentives However, a firm's internal governance arrangements do not necessarily mirror its external ones (Bacharach, Bamberger, and Sonnenstuhl 1996) This raises the question of what happens when supply chain workflows are subject to different governance regimes across external and internal relationships

We posit that a different governance regime within the manufacturer firm itself weakens the performance effects that follow from the use of norms and incentives toward an upstream supplier This is because individual governance mechanisms possess different interaction logics or decision-making properties (Heide and Wathne 2006, Messick 1999), and when different mechanisms are combined across relationships, the resultant governance mismatches cause performance losses

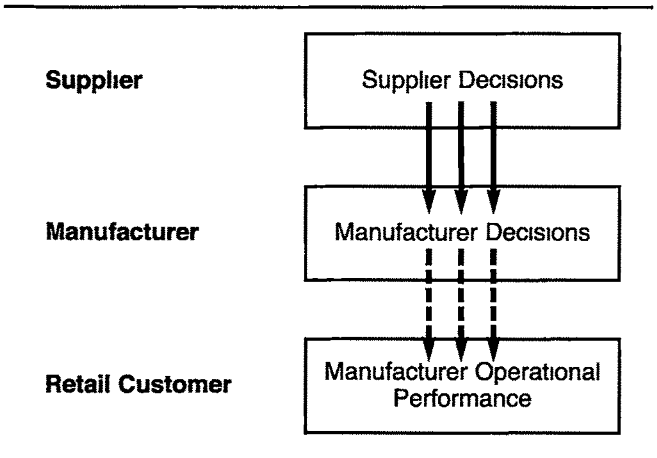
We test our hypotheses with an empirical study in the apparel industry From a theoretical standpoint, our findings reveal sources of friction between some commonly studied governance mechanisms, and they inform the ongoing research agenda on the interaction between social norms and economic incentives (Granovetter 2005, Kreps 1997) From a practical standpoint, we derive guidelines for relationship management that acknowledge both (1) how performance follows from the use of individual governance mechanisms *within* a particular relationship and (2) how governance mismatches *across* relationships weaken these effects In general, our findings suggest that limiting the focus of a firm's governance decisions to individual mechanisms and relationships is potentially misleading

We organize the article as follows In the next section, we present the theoretical framework and research hypotheses Then, we describe the research method used to test the hypotheses and the empirical results Finally, we discuss the study's implications and offer topics for further research

Theoretical Framework

Figure 1 shows the relationships among a manufacturer (e g , Perry Ellis), an upstream supplier (e g , Imago), and a downstream retail customer (e g , Macy's) We focus on the manufacturer's operational performance in relation to the downstream retailer, as reflected in a range of service outputs, such as delivery quality, cycle time, and order accuracy (Bucklin 1966) As Figure 1 shows, a manufacturer's performance toward a retail customer is the outcome of a series of generic workflows (e g , product design, manufacturing, sales, delivery) that involve both (1) the upstream supplier and (2) different functional areas and boundary personnel within the manufacturer firm itself (e g , in purchasing, merchandising, and sales)

FIGURE 1
Conceptual Framework



Although a supply chain is a unique competitive unit or an "organized behavior system" (Alderson 1957), the goals of the parties that constitute the system, whether they are external or internal to a particular firm, are not necessarily aligned on a consistent basis Transaction cost theory (e g , Williamson 2005) suggests that interactions between exchange partners may involve opportunism This requires the use of so-called governance mechanisms toward the focal parties, whose purpose is to influence their ongoing decision making and ensure that the overall workflow delivers performance in relation to the end customer

Drawing on different academic disciplines, prior research has identified the different forms of governance mechanisms For example, research grounded in sociological theory and contract law has emphasized the role of informal arrangements and relational contracts based on social norms In contrast, economic theory, in particular its "rational choice" branch (Becker 1976), has emphasized the role of formal incentives We consider how manufacturers can use each mechanism in their supplier relationships to enhance performance Next, we consider how the presence of an incompatible governance regime within the manufacturer firm itself weakens these effects

Manufacturer–Supplier Relationship: First-Order Effects

Research in sociology (e g , Granovetter 2005, Uzzi 1997) describes a "homo sociologicus" whose behavior is "pushed from behind" by informal rules or social norms Similarly, research on contract law (e g , Macneil 1980) shows how decisions, even between business partners, are influenced by implicit expectations of various kinds For example, interfirm relationships frequently involve solidarity norms, defined as bilateral expectations that a high value is placed on the relationship itself (Heide and John 1992) The focal point for such norms is the relationship as a whole—that is, a single maximizing unit (Macneil 1980) with shared roles

In a supply chain context (see Figure 1), the decisions subjected to solidarity norms include product design, quality, and delivery For example, consider a situation in which market conditions require adaptations to the supplier's delivery schedule Solidarity norms promote performance in such situations because their informal quality induces cooperation even when the terms of exchange between the parties are incomplete Adjustments are made without elaborate documentation of individual roles and tasks, and explicit cost–benefit linkages need not be established for each activity *ex ante* because the parties agree to tolerate, within reason, short-term inequities in the interest of the relationship as a whole

Uzzi's (1997, p 51) qualitative study provides examples of how established norms enable apparel suppliers and manufacturers to quickly reach mutual understandings and make decisions because, as one informant noted, "we are all in the same boat" In general, the stronger the solidarity norms between a manufacturer and a supplier, the more closely aligned are the relevant goals, and the higher is the likelihood that the supplier's ongoing decision making will promote manufacturer performance Thus

> H_1 The stronger the solidarity norms in the (upstream) supplier relationship, the greater is the manufacturer's (downstream) performance

In contrast with the sociological perspective on governance, economic theories of relationships, such as transaction cost and agency theory, embrace the assumption of a self-interested "homo economicus" whose decisions are "pulled from the front" by cost–benefit calculations of their likely consequences In turn, this assumption has led to an emphasis on formal governance mechanisms, such as economic incentives

A manufacturer can create supplier incentives by paying a price premium for the focal product A price premium refers to a price that exceeds the marginal costs or, equivalently, the competitive market price for a particular quality level (Klein and Leffler 1981) The effect of paying a price premium is to create a self-enforcing "contract" tied to the value of future transactions (Rao and Monroe 1996) When such a contract is in place, cooperative supplier actions ensure a continued revenue stream, and opportunistic actions, to the extent that they cause relationship termination, produce a revenue loss

Importantly, incentives promote supplier support for the relationship depending on their formal and explicit quality In contrast with the incomplete contracting logic of a solidarity norm, an incentive regime requires that the parties clearly specify individual roles, tasks, and performance levels (e g , with regard to product specifications and delivery schedule) as a basis for administering the incentives in question

The greater the incentives the manufacturer makes available to the supplier, the greater is the likelihood that the supplier's decisions support the manufacturer's strategy When market conditions necessitate supplier cooperation, as we described previously, the possibility of price premiums tied to future sales increases the likelihood that the supplier will perform the necessary activities and that the manufacturer's downstream performance will be enhanced Thus

> H_2 The greater the incentives in the (upstream) supplier relationship, the greater is the manufacturer's (downstream) performance

Hereinafter, we refer to the performance implications of the individual governance mechanisms expressed in H_1 and H_2 as first-order effects Figure 2 graphically illustrates the hypotheses Importantly, although these hypotheses involve individual governance mechanisms, they also involve complex, multilevel processes Specifically, they build on previous research (Wuyts et al 2004) to suggest that a firm's efforts to organize a particular (upstream) relationship could have spillover effects in a different one (i e , in a downstream customer relationship)

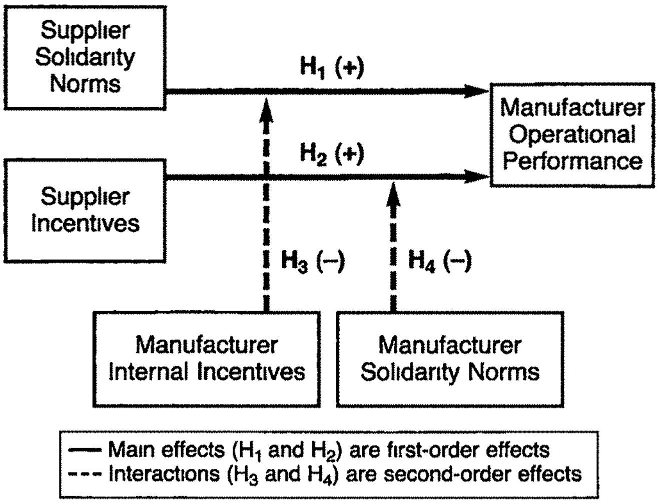
In the next section, we discuss how these effects weaken when the focal mechanisms coexist with a different governance regime within the manufacturer firm itself We refer to such scenarios as second-order effects (see Figure 2)

Constellations of External and Internal Governance Mechanisms: Second-Order Effects

The focus of a manufacturer's upstream governance efforts is on a supplier's decisions Although these efforts can influence manufacturer performance, the external supplier's decisions represent only a part of the overall input According to Choi, Dooley, and Rungtusanatham (2001), a defining feature of extended supply chains is the need to manage larger workflows that involve multiple firms and parties, including different functional areas and boundary personnel within a manufacturing firm (e g , merchandising and sales)

Importantly, the relevant decision makers within the manufacturer firm are also subject to governance regimes (Anderson and Gatignon 2005) Indeed, research (e g , Stinchcombe 1985) has shown that norms and incentives are generic governance devices that apply both across and within organizational boundaries For example, research in various disciplines (e g , Ayers, Dahlstrom, and Skinner 1997, Baker, Gibbons, and Murphy 2002, Blau and Scott 1962, Lindenberg 2001) has shown that informal solidarity norms, defined as expectations about joint responsibilities across functional areas, are common within firms Furthermore, parallel to the supplier relationship, boundary personnel within the firm may be subject to incentive regimes of various kinds (Lal and Staelin 1986, Mishra, Heide, and Cort 1998) For example, apparel companies frequently tie explicit and formal financial rewards (e g , salary increases, bonuses) to departmental managers' ability to manage downstream retailer relationships

FIGURE 2
Research Hypotheses


Supplier Solidarity Norms
H_1 (+)
Manufacturer Operational Performance
H_2 (+)
Supplier Incentives
H_3 (–)
H_4 (–)
Manufacturer Internal Incentives
Manufacturer Solidarity Norms
— Main effects (H_1 and H_2) are first-order effects
--- Interactions (H_3 and H_4) are second-order effects

Although a firm can use norms and incentives both externally and internally, its internal governance arrangements do not necessarily mirror its external ones Both the supply chain literature (e g , Charan 2006, Hemp and Stewart 2004) and organization theory (e g , Bacharach, Bamberger, and Sonnenstuhl 1996, McGinn and Keros 2002) show that governance regimes across organizational boundaries frequently differ This raises the question whether different governance mechanisms, when brought to bear on the same basic processes or workflows, affect overall manufacturer performance

Note that different governance mechanisms are associated with unique (social vs economic) interaction logics These logics differ in their (1) focal point (the overall relationship vs the individual parties), (2) time dimension (long vs short term), and (3) decision-making process (informal vs formal rules) Heide and Wathne (2006) argue that governance mechanisms are capable of inducing different generic relationship roles, which, when internalized, exert systematic influence on a party's decision making

In general, decision making across a value chain is facilitated by the extent to which the different parties (e g , the manufacturer's employees) operate within a single governance regime or employ the same decision logic However, to the extent that the relevant parties are subject to *different* governance regimes and are forced to switch between them, this creates a governance mismatch that weakens the effect of the individual mechanisms and thus reduces overall performance

Heide and Wathne (2006) explain switching across governance regimes in terms of the "stickiness" associated with particular roles We propose that stickiness resides in the unique properties of norms and incentives, which produce coordination difficulties when the two intersect as part of a larger workflow As a specific example, assume that the upstream supplier relationship is based on solidarity norms and that the internal relationships are governed through incentives Furthermore, consider a situation in which market conditions require a change in product design or delivery schedule Acting under a prevailing solidarity norm, the upstream supplier, when working with its counterpart in the manufacturer's purchasing department, will make the necessary changes to its processes without insisting on a complete specification of individual tasks and rewards When the cost–benefit implications of specific activities are not clear, the supplier will, within reason, "satisfice rather than maximize on price" (Uzzi 1997, p 37) Thus, while the solidarity norm's informal quality promotes performance, aspects of the overall workflow remain incomplete and undocumented

However, assume that internal stakeholders within the manufacturing firm (e g , the sales department) receive financial incentives that are affected by the supplier's actions To safeguard their individual incentives against supplier nonperformance, these stakeholders will demand that the informal dealings with the supplier be formally codified and translated into individual tasks and performance levels as a prerequisite for an appropriate compensation process Conceptually, the particular interaction logic that underlies incentives (e g , Klein and Leffler 1981, Messick 1999) requires that such codification takes place The necessary process, however, is time consuming, costly, and subject to both direct errors and omissions that compromise performance to the downstream customer[1]

In principle, if the manufacturer's other departments are subject to the same type of governance regime (i e , solidarity norms), the larger workflow will not be subject to obstacles, and the upstream governance mechanisms will promote manufacturer performance in an unconstrained fashion However, to the extent that functional areas within the firm employ different interaction logics, coordination difficulties predictably emerge Therefore, the outcome of different governance regimes along a larger supply chain is ongoing coordination problems between the relevant decision makers Ultimately, these problems are sources of performance drains

In summary, although the upstream solidarity norm in itself has a positive impact on the supplier's decisions and, ultimately, on manufacturer performance, its effect weakens in the presence of a strong internal incentive regime Thus

H_3 The effect of solidarity norms in an (upstream) supplier relationship on (downstream) manufacturer performance weakens with internal incentives within the manufacturer firm

We next consider the effect of a different type of governance mismatch, in which the external supplier relationship is governed by formal incentives and the relevant departments within the manufacturer firm are subject to informal solidarity norms The prerequisites for a supplier incentive scheme to promote performance are the ability to (1) define appropriate tasks and performance outcomes and (2) link individual tasks and outcomes with formal financial rewards (Klein and Leffler 1981) What happens, however, when this type of governance regime and its underlying economic logic coexist with an internal regime in which decisions are made according to informal norms?

Consider a situation in which market conditions require that a change be made in product design Given the prevailing solidarity norm, the relevant internal parties interact informally with each other For example, the sales department may not specify a complete list of acceptable new coloring dyes Nonetheless, in line with the prevailing norm, the sales department expects its counterpart in purchasing to make the appropriate decisions based on the parties' joint responsibilities

However, for the upstream supplier to perform its part of the larger design workflow, the internal norm must be translated into specific supplier tasks and measurable outcomes for the supplier to establish incentive claims under its particular (incentive-based) governance regime As we noted previously, transitions between informal norms at one level and explicit tasks and outcomes at another may cause delays, omissions, and actual errors, all of which may compromise overall performance As H_2 states, formal incentives influence supplier decision making favorably, but if aspects of the required tasks are incompletely specified in the first place, the effect of the supplier incentives on overall performance will weaken Kaplan and Henderson (2006) specifically note the difficulty involved in matching incentive systems to incompletely specified tasks

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[1] Gibbons and Roberts (2010) note how relational norms are idiosyncratic to a set of parties and their circumstances In part, this explains a norm's performance implications, but its idiosyncratic nature also makes a norm's content difficult to codify and express to third parties Polanyi's (1967, p 4) quote illustrates this process well "We can know more than we can tell"

In principle, and in accordance with H_3, the relevant internal departments may attempt to switch or transition between governance regimes However, we expect that such efforts are time consuming and that the performance of the employees in question may suffer as a consequence In general, we expect that governance mismatches between external incentives and internal norms produce inefficient interactions between boundary personnel, which weaken the effect of external supplier incentives on performance Stated formally,

> H_4 The effect of incentives in an (upstream) supplier relationship on (downstream) manufacturer performance weakens with solidarity norms within the manufacturer firm

Summary of Hypotheses

Statistically, our hypotheses involve a set of contingency predictions that include (1) positive main effects of external solidarity norms and incentives on manufacturer performance (H_1 and H_2) and (2) negative interactions due to governance mismatches across relationships (H_3 and H_4) From a technical standpoint, these contingency predictions pertain to the slope of the relationships between the external governance mechanisms and performance as a function of the internal governance regime In practical terms, our hypotheses express the impact on manufacturer performance when workflows that comprise both external and internal stakeholders are subject to incompatible interaction logics

Research Method

Empirical Context and Data Collection

The empirical context for our study is the U S apparel industry Our research setting is the supply chain for a particular apparel item, involving an apparel manufacturer, an upstream supplier (contractor), and a downstream retail customer The apparel industry represents a suitable context for our research because (1) the processes and workflows that affect manufacturer performance involve both external and internal relationships (Magretta 1998) and (2) the firms rely on both norms and incentives (Uzzi 1997) To safeguard against same-source bias, we obtained the dependent variable (manufacturer performance) from the customer and the focal independent variables (pertaining to the external and internal relationships) from the manufacturer

We collected data through a field study that included manufacturer and customer key informants The initial sampling frame was a national mailing list of 9574 managers in U S apparel companies The managers were contacted by telephone to locate an appropriate key informant within each company Ultimately, we identified 1764 managers who (1) were knowledgeable about their company's external and internal relationships, (2) were willing to participate in the study, and (3) worked for companies we deemed appropriate for the study because they purchased from independent suppliers and sold to independent retailers

Each manufacturer informant received a questionnaire and completed it with respect to a particular apparel item To capture exchange relationships that were salient to the informants and avoid a potential selection bias, we instructed informants to select the largest supplier (by annual dollar value) and the largest retail customer (by annual purchase volume) for the focal garment After callbacks and a second mailing, we received 497 questionnaires, for a 28% response rate (among eligible informants) Of these, we discarded 13 because of excessive missing data

Given our interest in collecting matched data, we also asked the manufacturer informants to identify an informant from the focal customer firm In total, we obtained 218 different customer informant names (one for each retailer) from the apparel company managers We qualified these informants using a similar procedure Of the 218 names received, 178 (82%) met our informant criteria and were mailed a questionnaire To boost response rates, we promised each retailer a report containing the main findings from the study and a comparison of the retailer firm with the overall sample Ultimately, 81 customer questionnaires were returned, for a 46% response rate, which yielded 81 matched manufacturer–customer responses

Key Informant Checks

We administered a post hoc test of the manufacturer informants' knowledge about their firms' supplier and retailer relationships (Kumar, Stern, and Anderson 1993) On a seven-point scale, 63 informants scored lower than 4 on either of the scales and were eliminated The average scores for the remaining 421 manufacturer informants were 6 3 (SD = 89) and 6 2 (SD = 99), respectively Of the informants, 80% were owners, chief executive officers, presidents, vice presidents, or general managers, and the remaining ones held senior positions The average knowledge score for the retailer informants was 6 5 (SD = 74) Overall, these checks suggest that our informants were well qualified to report on the focal phenomena [2]

Nonresponse Bias

We conducted two tests of nonresponse bias First, we compared early and late responses for both the apparel and the retail companies with respect to the key study variables (Armstrong and Overton 1977) Second, we compared our final matched sample with (1) companies on the original mailing list with respect to two demographic measures (number of employees and total revenues) and (2) the remaining (unmatched) sample of apparel companies with respect to the focal independent variables. We found no significant differences, suggesting an absence of bias.

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[2] We also inspected the informant responses for consistency with respect to our theoretical variables Of the 81 matched responses, only 1 showed an idiosyncrasy, in the form of a pricing practice in which the final garment price was decided *ex post* (after delivery) rather than *ex ante*, according to the logic of price premiums (Klein and Leffler 1981), and thus we eliminated it from subsequent analyses We also ran our analyses after including this observation, but we found the same results

Measures

We measured all the key variables using multi-item reflective scales. The items, response formats, scale source, and key descriptive statistics appear in the Appendix.

Manufacturer operational performance (PERF). Our dependent variable captures the manufacturer's operational performance, as reflected in a particular set of service outputs (Bucklin 1966) to the downstream retailer. Although performance involves many aspects (e.g., Kumar, Stern, and Achrol 1992), we focused on its operational dimension because of its salience in a supply chain context (e.g., Uzzi 1997). We used six items, including initial order fulfillment cycle, percentage of on-time shipments, replenishment cycle time, quality, completeness of shipments, and responsiveness (Hult, Ketchen, and Slater 2004). For brevity, we refer to manufacturer operational performance simply as performance.

Supplier solidarity norms (SSN). Solidarity norms describe the expectation that parties choose behaviors that support the relationship as a whole and abstain from behaviors that have negative consequences (Lusch and Brown 1996; Macneil 1980). The four items are based on the ones Heide and John (1992) use.

Supplier incentives (SI). This scale captures the incentives the apparel manufacturer uses in the supplier relationship. Specifically, we focus on incentives in the form of price premiums that create an ongoing revenue stream for the supplier. Consistent with Klein and Leffler's (1981) definition, the items assess whether the prices in question exceed the normal prices or competitive prices for similar garments. The informants indicated that given the ongoing transactions involving the same apparel item, baseline quality expectations are well established and, in turn, easily evoked in response to item wordings (e.g., "normal," "similar garments"). As such, informants judged price premiums against the manufacturers' ingrained expectations. The specific scale items are identical to the ones Rao and Bergen (1992) and Mishra, Heide, and Cort (1998) use.

Manufacturer solidarity norms (MSN). Parallel to supplier solidarity norms, our measure of internal norms captures the willingness of departments within the apparel company to strive for joint or collective benefits. Consistent with Ayers, Dahlstrom, and Skinner's (1997) operationalization and extant work on organizational properties (e.g., Deshpandé, Farley, and Webster 1993), the measure captures the overall level of solidarity between the departments involved in supplying the garment to the downstream retailer.

Manufacturer internal incentives (MI). This scale captures the financial incentives given to the manufacturers' departmental managers who are involved in supplying the downstream retail customer. Specifically, the internal counterparts to supplier price premiums involve salary increases and bonuses (e.g., Lal and Staelin 1986). In-depth interviews with apparel company managers showed that this was a standard compensation practice among apparel companies. We adapted the scale items from Mishra, Heide, and Cort (1998).

Control variables. We also included a series of control variables to account for alternative influences on manufacturer operational performance. First, we controlled for a key aspect of the upstream power structure (Frazier 1983; Lusch and Brown 1996)—namely, supplier size relative to the manufacturer. We collected this measure from the manufacturers. Second, we accounted for the power structure in the downstream relationship by including a measure of manufacturer size relative to the customer (retailer). We obtained this measure from the retailers.

Following transaction cost theory (Williamson 1996), we controlled for manufacturer transaction-specific investments (TSIs) in both the supplier and the retailer relationships. By definition, TSIs create lock-in and thus increase a party's motivation to perform (Anderson and Weitz 1992; Nygaard and Dahlstrom 2002). We also accounted for the suppliers' and retailers' TSIs toward the manufacturer (Jap and Ganesan 2000). We obtained these measures from the manufacturers and the retailers, respectively.

Next, we controlled for two exchange attributes (Akerlof 1970; Williamson 1996; Wuyts et al. 2004) of the downstream market: (1) demand volatility and (2) quality uncertainty regarding the focal items. We measured demand volatility with a four-item scale based on the ones Poppo and Zenger (2002) and Wathne and Heide (2004) use. To obtain the quality uncertainty measure, we supplied qualitative descriptions of the focal garments (provided by manufacturer informants) to managers in two independent apparel retailing firms and asked them to rate the inherent difficulty of ascertaining the garment's overall quality. To limit rater effort, each party rated only half the observations in our sample; we randomly chose the individual observations supplied for rating from our sample.

Given our interest in performance in the downstream relationship, we accounted for two additional characteristics of the manufacturer's relationship with the downstream retailer. Specifically, we controlled for (1) downstream solidarity norms and (2) the pricing arrangement used (adjustable vs. fixed pricing) in the downstream relationship. We obtained these measures from the retailer informants. The final control variable was whether the focal garment was branded; this particular characteristic can influence relationship outcomes.

Analysis Strategy

We employed partial least squares (PLS) estimation for analyses. We chose PLS because improper or nonconvergent solutions are unlikely to occur even in small samples (Fornell and Bookstein 1992; Hulland, Ryan, and Rayner 2010; Wold 1989). Moreover, PLS offers bootstrapping capabilities that can address stability issues in limited samples such as ours (Henseler, Ringle, and Sinkovics 2009; Hulland 1999). Another benefit of PLS is that it permits us to account for error in our measures that are captured through fallible indicators

We estimated both the measurement and the structural (regression) models simultaneously using SmartPLS 2 0 (Ringle, Wende, and Will 2005) We describe the details and the results for these models sequentially

Measurement Model

The results of the measurement model appear in Table 1 Given our modest sample size, we ran a partially disaggregated measurement model that included all our focal variables and the multi-item controls (Bagozzi and Heartherton 1994) As we show in the Appendix, for two of the control variables (volatility and manufacturer TSIs downstream), we dropped one item each because of a low (< 4) and insignificant loading (Churchill 1979, Hulland 1999)

As Table 1 shows, the composite reliabilities for all variables exceed 70, and all the factor loadings are significant ($t > 1\ 96$) The average variance extracted exceeds the 5 level for all focal variables These results establish the convergent validity of our measures Furthermore, the average variance extracted for each measure always exceeded the highest shared variance between every construct pairs, which provides evidence of discriminant validity (Fornell and Larcker 1981) We also examined item cross-loadings for all constructs but found no significant effects, which provides additional evidence of discriminant validity Table 2 reports all correlations and descriptive statistics

Hypotheses Tests and Results

Our hypotheses suggest that upstream governance efforts increase manufacturer downstream performance (H_1 and H_2) but that a governance mismatch across external and internal relationships weakens these effects (H_3 and H_4) To test these hypotheses, we estimated a structural model that included paths from (1) the upstream governance mechanisms (supplier solidarity norms [SSN] and supplier incentives [SI]), (2) the internal governance mechanisms (manufacturer solidarity norms [MSN] and manufacturer internal incentives [MI]), (3) the interactions between the external and the internal mechanisms (SSN × MI and SI × MSN), and (4) all the control variables to manufacturer operational performance (PERF)

$$\text{PERF} = f(\text{SSN}, \text{SI}, \text{MSN}, \text{MI}, \text{SSN} \times \text{MI}, \text{SI} \times \text{MSN}, \text{controls})$$

Because our focal measures are latent variables, their interactions are also represented as latent variables by the SmartPLS software, which uses the product-indicator procedure that Chin, Marcolin, and Newsted (2003) developed in conjunction with PLS Following recommendations in previous research (e g , Chin, Marcolin, and Newsted 2003, Hulland, Ryan, and Rayner 2010, Wuyts and Geyskens 2005), we standardized all indicators to aid interpretation Finally, because PLS is a distribution-free approach, it does not offer parametric significance tests Instead, we performed bootstrapping (drawing 100 samples with replacement) to compute the standard errors and significance levels of the estimated parameters (Hulland 1999)

Overall, our model explains a significant amount of the variance in manufacturer performance (adjusted $R^2 = 36$) Furthermore, including the focal interaction terms enhances model adjusted R-square by 20% (adjusted $R^2 = 36$ and 30 with and without the interactions) Table 3 shows the specific results from the structural model

Structural model results H_1 states that reliance on supplier (upstream) solidarity norms increases manufacturer operational performance toward the downstream customer As Table 3 shows, the main effect of supplier solidarity norms ($\beta = 20$, $p < 01$) is significant and positive, in support of H_1 H_2 states that reliance on supplier incentives has a positive effect on manufacturer downstream performance Consistent with this, the regression coefficient for supplier incentives is positive and significant ($\beta = 25$, $p < 01$) These results represent the first-order effects created by the upstream governance mechanisms on performance in the downstream relationship

Our contingency hypotheses (H_3 and H_4) pertain to the second-order or joint effects of the external and internal governance mechanisms Specifically, H_3 states that the performance effects of solidarity norms in the supplier relationship weaken with internal incentives within the manufacturer firm Statistically, this is represented by a negative interaction term between supplier solidarity norms and manufacturer internal incentives As Table 3 shows, the interaction term is negative and significant ($\beta = -33$, $p < 01$), in support of H_3

To investigate H_3 further, we graphed the relationship between manufacturer performance and supplier norms following Aiken and West's (1991) procedure Specifically, we computed the slope (partial derivative) between performance and supplier norms ($\partial\text{PERF}/\partial\text{SSN}$) at three levels of the moderator variable (manufacturer internal incentives [MI]) (1) at one standard deviation below the mean ($\text{MI}_{-1\sigma}$), (2) at the mean level (MI_{mean}), and (3) at one standard deviation above the mean ($\text{MI}_{+1\sigma}$) The range for MI (mean centered) is (–2 02, 2 94) The plots and the significance tests for the slopes appear in Figure 3, Panel A

As Figure 3, Panel A, depicts, supplier norms have a monotonic effect on performance Specifically, supplier solidarity norms increase performance over the range of manufacturer internal incentives but at a decreasing rate Solidarity norms strongly increase performance at one standard deviation below the mean of manufacturer incentives ($\partial\text{PERF}/\partial\text{SSN} = 53$, $p < 01$) The strength of this slope weakens but continues to be positive at the mean level of the moderator ($\partial\text{PERF}/\partial\text{SSN} = 20$, $p < 01$) However, the effect of solidarity norms becomes insignificant ($\partial\text{PERF}/\partial\text{SSN} = -13$, $p > 1$) at one standard deviation above the mean of internal incentives

Next, H_4 states that the effect of supplier (upstream) incentives on downstream performance weakens with (internal) manufacturer solidarity norms Statistically, this relationship is represented by a negative interaction term between supplier incentives and manufacturer solidarity norms

As we noted previously, the main effect of supplier incentives on manufacturer performance is positive and significant (H_2) However, its interaction with internal solidar-

TABLE 1
Partially Disaggregated Measurement Model for Focal Theoretical Variables and Multi-

Items Loadings	Manufacturer Operational Performance (ξ1)	Supplier Solidarity Norms (ξ2)	Supplier Incentives (ξ3)	Manufacturer Solidarity Norms (ξ4)	Manufacturer Internal Incentives (ξ5)	Manufacturer TSIs Upstream (ξ6)	Supplier TSIs (ξ7)	Manufactur TSIs Downstrea (ξ8)
X1	90 (37 98)							
X2	92 (69 22)							
X3	93 (53 09)							
X4		89 (5 64)						
X5		92 (5 16)						
X6		97 (4 49)						
X7			90 (4 50)					
X8			82 (3 47)					
X9			85 (3 65)					
X10				75 (4 00)				
X11				95 (7 38)				
X12				98 (3 65)				
X13					95 (17 77)			
X14					91 (7 38)			
X15					95 (8 21)			
X16						85 (4 29)		
X17						80 (4 57)		
X18						88 (4 70)		
X19							92 (6 73)	
X20							91 (4 91)	
X21							81 (4 53)	
X22								62 (2 53)
X23								91 (3 66)
X24								52 (1 99)
X25								
X26								
X27								
X28								
X29								
X30								
X31								
X32								
X33								
Composite reliability	94	95	89	93	96	88	91	74
Average variance extracted	84	86	74	81	88	71	77	50
Highest shared variance	27%	16%	9%	16%	9%	20%	20%	6%

TABLE 2
Descriptive Statistics

Manufacturer operational performance	1 00															
Supplier solidarity norms	06	1 00														
Supplier incentives	−07	−38	1 00													
Manufacturer solidarity norms	04	33	−21	1 00												
Manufacturer internal incentives	30	02	02	16	1 00											
Relative size upstream	04	−13	22	00	−07	1 00										
Relative size downstream	−15	−07	23	15	−10	−03	1 00									
Manufacturer TSIs upstream	13	10	−02	04	06	12	−06	1 00								
Supplier TSIs	−06	02	12	−03	−01	12	00	49	1 00							
Manufacturer TSIs downstream	−09	00	14	−20	−19	11	−10	−23	−04	1 00						
Retailer TSIs	−06	−17	13	−08	03	06	−03	−03	13	39	1 00					
Demand volatility	00	−01	23	−02	−13	07	−03	07	−03	02	−08	1 00				
Quality uncertainty	−11	35	−02	04	−02	06	−20	10	−03	20	25	09	1 00			
Retailer solidarity norms	53	30	−19	07	16	−04	−02	16	09	−09	04	−15	16	1 00		
Retailer pricing (fixed/not fixed)	−12	03	−07	03	10	−11	−19	−13	−07	−01	04	−04	25	−04	1 00	
Garment (branded/not branded)	10	05	−24	01	−06	00	−04	00	08	17	10	−14	08	02	−17	1 00
M	5 50	5 49	2 92	5 56	5 71	78	42	3 76	3 22	2 83	2 96	3 52	4 22	5 68	23	45
SD	1 08	1 28	1 27	1 19	1 29	42	50	1 36	1 38	1 40	1 44	1 20	1 21	1 19	42	49

Notes All analyses are based on N = 80 r > 23 are significant at $p <$ 05 (two-tailed)

TABLE 3
Structural Model Estimates: Manufacturer Operational Performance

	Structural Path Estimates (Est.)	Bootstrap Standard Error (SE)	Bootstrap T (Est./SE)
Supplier solidarity norms (SSN)	20	10	2 00***
Supplier incentives (SI)	25	10	2 50***
Manufacturer solidarity norms (MSN)	– 07	08	– 88
Manufacturer internal incentives (MI)	22	10	2 20***
SSN × MI	– 33	10	–3 30***
SI × MSN	– 23	11	–2 09***
Relative size upstream	03	08	38
Relative size downstream	– 19	09	–2 11**
Manufacturer TSIs upstream	– 22	10	–2 20**
Supplier TSIs	– 01	10	– 10
Manufacturer TSIs downstream	– 07	10	– 70
Retailer TSIs	– 01	08	– 13
Demand volatility	09	08	1 13
Quality uncertainty	– 49	13	–3 77***
Retailer solidarity norms	63	12	5 25***
Retailer pricing (fixed/not fixed)	– 07	09	– 78
Garment (branded/not branded)	16	09	1 78*
$R^2 = 50$			
Adjusted $R^2 = 36$			
N = 80			

*$p \leq 1$
**$p \leq 05$
***$p \leq 01$
Notes We used one-tailed tests for hypothesized effects and two-tailed test for the control variables

ity norms is negative and significant ($\beta = -23$, $p < 01$), suggesting that the performance-enhancing effect of supplier incentives weakens over the range of internal solidarity norms To investigate these effects further, we plotted the slope between performance and supplier incentives ($\partial PERF/\partial SI$) over the range of the moderator variable (internal solidarity norms [MSN]) (1) at one standard deviation below the mean ($MSN_{-1\sigma}$), (2) at the mean level (MSN_{mean}), and (3) at one standard deviation above the mean ($MSN_{+1\sigma}$) The range of MSN (mean centered) was (–3 90, 1 30)

As Figure 3, Panel B, shows, supplier incentives have a monotonic effect on manufacturer performance Specifically, the positive performance effect weakens over the range of internal solidarity norms The effect of supplier incentives on performance is strongest at one standard deviation below the mean level of internal solidarity norms ($\partial PERF/\partial SI = 48$, $p < 01$) The effect weakens substantially at the mean level of internal norms ($\partial PERF/\partial SI = 25$, $p < 01$) and becomes insignificant at one standard deviation above the mean ($\partial PERF/\partial SI = 02$, $p > 1$)

Collectively, these tests support the key premise of our study—namely, that incentives and norms individually promote favorable (first-order) effects in the form of performance spillovers across relationships (H_1 and H_2) However, as the negative interaction (second-order) effects reveal, the performance benefits of individual mechanisms weaken when different governance mechanisms are combined across internal and external relationships (H_3 and H_4)

Among the control variables, greater manufacturer size relative to the retailer is negatively associated with downstream performance ($\beta = -19$, $p < 05$) The coefficients for both manufacturer TSIs upstream ($\beta = -22$, $p < 05$) and quality uncertainty ($\beta = -49$, $p < 01$) are negative As we expected, retailer solidarity norms are positively associated with performance ($\beta = 63$, $p < 01$) Branded garments seem to enjoy superior performance to unbranded ones ($\beta = 16$, $p < 1$)

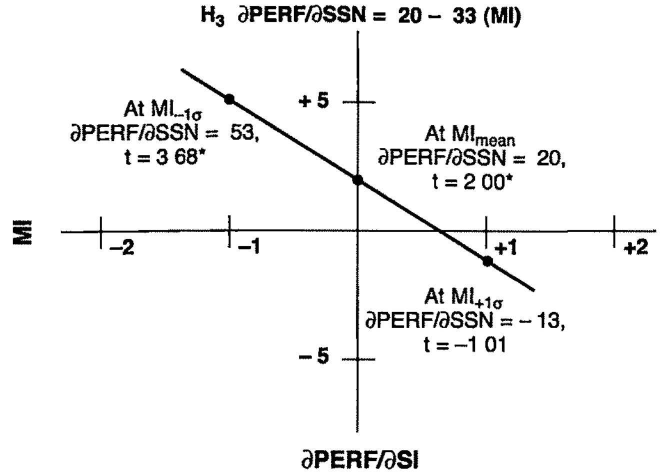
Common method variance Although common method variance is unlikely to be an issue in our study because we collected the dependent and independent measures from different parties, we examined the robustness of our results to its possible effect Specifically, we reestimated our structural model after allowing a method factor to load freely onto all indicators, following the general PLS estimation procedure described by Podsakoff et al (2003) and adapted by Liang et al (2007, pp 85–87)

We found that the structural model estimates for our hypothesized effects remained virtually unchanged after we introduced the method factor Furthermore, all item loadings on the common method factor were insignificant ($t < 2$) Finally, the proportion of variance in each observed indicator (computed as the square of the item loadings) explained by its focal construct (83% on average) substantially exceeded the variance explained by the method factor (1% on average) Collectively, these analyses suggest that method variance does not materially affect our conclusions (Liang et al 2007)

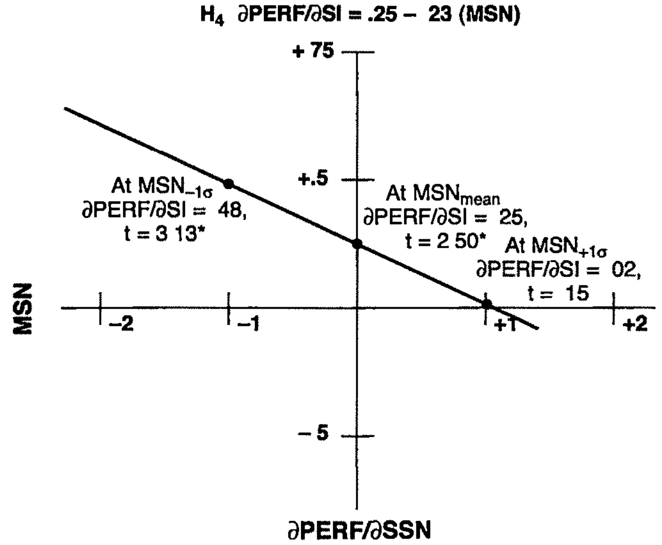
Within-level mismatches Although our primary focus is on the effects of incompatible governance regimes across relationships (H_1–H_4), it could be argued that governance mismatches within a particular relationship (e g , reliance

FIGURE 3
Plots for Cross-Level Mismatches

A: Slope of Supplier Solidarity Norms (SSN) on Manufacturer Operational Performance (PERF) over the Range of Manufacturer Internal Incentives (MI)



B: Slope of Supplier Incentives (SI) on Manufacturer Operational Performance (PERF) over the Range of Manufacturer Solidarity Norms (MSN)



*$p \leq 01$

on incentives and norms within the external and/or internal relationships) also undermine performance outcomes Such scenarios have received some attention in prior research (e g , Poppo and Zenger 2002, Zenger, Lazzarini, and Poppo 2002) based on the notion that explicit incentives may degrade the coordination benefits of social norms (e g , Bowles 2008, Frey and Stutzer 2007, Kreps 1997)

Ultimately, we expect that mismatches in governance that cross organizational boundaries carry greater weight Within a particular relationship, the common context represented by joint ownership may counteract the negative implications of mismatches Nonetheless, we formally examined the effects of within-level mismatches by reestimating our focal structural model after augmenting it with the two within-level mismatch terms In the expanded model, all our hypothesized effects remained significant at the previous levels Furthermore, we found partial support for the performance implications of within-level mismatches The interaction between supplier incentives and solidarity norms was insignificant, while the interaction between internal norms and incentives was significant and negative (MSN x MI $\beta = -23, p < 01$)

Analysis of mismatches versus matches Our predictions suggest that governance mismatches across relationships weaken the effect of the upstream mechanisms Conceivably, we could also consider the performance implications of governance "matches"—that is, whether deployment of the *same* type of governance mechanism across relationships enhances the effect of a certain mechanism We reestimated the focal model with two additional interactions that corresponded to matches (e g , SSN × MSN) The main effects of the upstream mechanisms and the mismatch effects remained significant, while the terms corresponding to the matches were insignificant Specifically, the tests for matches between upstream and internal norms and between upstream and internal incentives yielded $\beta = 01$ ($p > 1$) and $\beta = 17$ ($p > 1$), respectively[3]

Substantively, these results suggest that matches do not incrementally enhance the effectiveness of the upstream governance mechanisms In other words, although performance losses can arise from mismatches across relationships, it is not clear whether matching governance efforts actually enhance the effects of the individual upstream governance variables That is, the cross-level interaction effects we show are inherently negative in nature These results reveal an important boundary condition for our findings

Sources of performance In transaction cost theory (Williamson 2005), performance results from an alignment between governance problems and mechanisms For example, transaction cost theory's adaptation argument suggests that solidarity norms are appropriate responses to conditions of demand volatility and that the interaction between the two should affect performance Conversely, a failure to deploy a particular mechanism under certain conditions should reduce performance

To the extent that performance is influenced by both the alignment between governance problems and mechanisms (in line with standard transaction cost theory) and the mismatches between the mechanisms themselves (in line with our hypotheses), the former represents an alternative explanation for our findings To explore this formally, we reestimated our model to account for the possible effects of alignment by augmenting the model with interactions between governance problems and mechanisms (e g , demand volatility × solidarity norms)

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[3] Conceptually, governance matches (e g , high supplier incentives with high manufacturer internal incentives) and mismatches (e g , high supplier incentives with high manufacturer solidarity norms) are not opposite scenarios, because they involve different sets of variables (manufacturer internal incentives vs manufacturer solidarity norms) If a "mismatch" means high supplier incentives with high manufacturer solidarity norms, logically a lack of a mismatch would refer to a combination of high supplier incentives and low manufacturer solidarity norms, which is different from a "match" (high supplier incentives with high manufacturer internal incentives)

Our hypothesized mismatch effects remained unchanged even after we accounted for alignment effects For example, while the volatility × solidarity norm ($\beta = 23$, $p < 05$) term had a significant and positive effect on performance, consistent with the alignment thesis, all the mismatch effects remained significant In general, these analyses suggest that our observed performance results are attributable to mismatches between different governance mechanisms and not to the degree of alignment between mechanisms and governance problems per se

Discussion

Implications for Theory

Prior research has identified different governance mechanisms that are available for managing exchange relationships, including solidarity norms and economic incentives However, with some exceptions (e g , Antia and Frazier 2001, Wathne and Heide 2004), the focus of these studies has been on the mechanisms' effects within individual relationships The current study extends prior research by showing how specific mechanisms, when deployed in an (upstream) supplier relationship, are capable of promoting performance in a different (downstream) one Although extant theory frequently views different relationships as independent transactions separated by sharp "boundaries" (Williamson 1996), our evidence of spillover effects suggests that individual governance mechanisms have greater payoffs than frequently recognized

At the same time, we also showed that the performance effects of a firm's external governance mechanisms are contingent on the ones the firm uses internally Specifically, we showed that supplier norms and incentives, which have individual performance effects, actually weaken each other's effects when they coexist across external and internal relationships

Importantly, the performance implications of governance mismatches would not be revealed by standard analyses of individual relationships and governance mechanisms Our results show that governance variables, which are well understood at the individual relationship level, have complex performance effects, some of which are revealed only when the level of analysis is expanded from individual relationships to larger constellations of dyads and governance mechanisms

In general, this study builds on Bradach and Eccles's (1989) plural forms thesis about combinations of governance mechanisms In our empirical tests, the main effects of supplier norms and incentives (H_1 and H_2) suggest that the two governance mechanisms contribute separately to performance In other words, the two mechanisms have additive effects on performance, which is consistent with Bradach and Eccles's conjecture about the role of governance mechanisms as building blocks At the same time, we showed that the interactions between different mechanisms across relationships cause performance losses Overall, our findings point to the complexity of the plural forms phenomenon, as Cannon, Achrol, and Gundlach (2000) note

In a broad theoretical sense, our findings shed light on the effects of combining incentives and social norms Economists (e g , Kreps 1997) have noted the importance of such questions but also lamented the lack of testable propositions and empirical evidence Similarly, sociologists (e g , Granovetter 2005) have pointed to the commonality of mixed courses of action but stopped short of articulating the likely processes and their effects As we discussed previously, our study shows that both norms and incentives are associated with positive performance effects At the same time, our findings underscore the importance of examining individual mechanisms' unique decision logics and their interactions Somewhat surprisingly, although it is commonly accepted that the upshot of governance is to influence decision making, the microlevel properties of particular mechanisms have received limited attention Our study shows that because of their inherent incompatibilities, these properties may be sources of performance drains in situations in which a firm's strategy involves multiple relationships and governance mechanisms

Implications for Practice

In an influential study, Arndt (1979, p 73) describes one of the marketing function's inherent challenges in terms of "negotiating agreements with external boundary persons and having them ratified by internal constituents" Arndt's statement serves as a general illustration of our current hypotheses Firms may rely on norms and incentives to govern relationships with external suppliers, but the performance implications of these mechanisms also depend in part on the governance regimes within the firm itself Specifically, our findings suggest that firms must explicitly account for both the performance *gains* from using norms and incentives within a particular relationship and the potential *losses* that governance mismatches across relationships produce

We propose a general decision heuristic for relationship governance based on our findings For example, consider a manufacturer that is evaluating its strategy toward an external supplier Established governance theory suggests that the firm should consider the particular attributes of the relationship in question and subsequently deploy governance mechanisms that match these attributes Such an analysis of individual "transactions" is at the core of transaction cost theory's discriminating alignment principle However, following this principle, assume that the firm develops a tentative "blueprint" for the external supplier relationship that involves explicit incentives Our findings suggest that this relationship-level analysis should be augmented with an assessment of a firm's other relationships Such an aggregated analysis is necessary to ascertain whether the relationship-level blueprint will produce governance mismatches that have negative performance implications

In this example, to the extent that incentives are deployed in all the relevant relationships, governance mismatches will not result, and the firm can implement the blueprints for each individual relationship and achieve its full performance benefits Alternatively, the analysis may reveal potentially problematic mismatches, for example, if the relationship-level blueprint produces a larger governance constellation in which external incentives are combined with internal norms If so, a comparative analysis involving (1) the performance gains from deploying supplier incentives and (2) the performance losses caused by mismatches must be undertaken If the latter are significant, the firm should modify the initial governance blueprint by altering the magnitude of the supplier incentives and potentially sacrificing some of the related gains

Overall, our findings tell a cautionary tale about relationship management and governance combinations A narrow focus on individual relationships and governance mechanisms will miss the occurrence of governance mismatches and related performance losses In particular, our findings suggest that firms should exercise caution when making changes to their existing governance menus For example, although adding a governance mechanism such as explicit incentives at one level in an overall supply chain provides some degree of incremental control, the overall effect on the chain's performance need not be positive, to the extent that the incentives produce costly mismatches with norms elsewhere in the overall supply chain

Our findings point to the practical difficulty that firms face when trying to "bond" with multiple stakeholders As we discussed, prior research has identified the different ways firms can align themselves with exchange partners, including incentive mechanisms and credible commitments of various kinds (Anderson and Weitz 1992) Implicitly or explicitly, much of this work has viewed bonding efforts as having inherently positive performance implications Our findings paint a slightly more complex picture Specifically, to the extent that a firm's strategy comprises multiple stakeholders (e g , suppliers, internal departments, downstream customers) and governance mechanisms (e g , norms, incentives), it may face competing demands that have negative performance implications As such, the use of different bonding initiatives in various parts of a supply chain may, somewhat counterintuitively, actually precipitate performance losses

Finally, the guidelines that follow from our study suggest a decision heuristic that involves both multiple relationships and the content of each one At first glance, such a heuristic may seem daunting because of the necessary relationship setup and maintenance costs However, when deployed, a vertical architecture (Jacobides and Billinger 2006) of governance efforts across relationships may offer important strategic benefits by virtue of being inherently difficult to duplicate

Limitations and Further Research

Some limitations of this research should be noted First, the size of our current sample is modest Although we used appropriate analysis procedures and the results were robust to different model specifications, it would be desirable to replicate our findings with a larger sample In addition, the study consisted of a single industry Although the homogeneous context poses certain advantages, it raises questions about generalizability to other industries and contexts

Second, we limited our focus to the juxtaposition between two particular governance mechanisms, namely, norms and incentives These are prototypical governance mechanisms, but they do not exhaust the domain of available devices Moreover, norms and incentives might be implemented in different ways (Anderson and Weitz 1992) Our focus was on supplier incentives in the form of price premiums, but incentive structures can be crafted in other ways

Unresolved questions also pertain to the effect of solidarity norms Our focus was on the effects of an existing norm, but exchange norms clearly evolve over time, which raises questions about relationship dynamics For example, suppose that a supplier relationship at one point in time is governed on the basis of price premiums and that this does not create problematic mismatches with the supplier's internal counterparts because of weak norms within the focal manufacturer firm However, if over time solidarity norms begin to evolve within the firm itself, if we take our theoretical arguments to their logical conclusion, this would suggest that the firm should scale back the upstream incentive system, to the extent that it creates problematic governance mismatches However, if the internal solidarity norms emerge gradually, the negative effects of mismatches may be less severe than anticipated This situation cannot be addressed without longitudinal data, but it represents an avenue for further research

Further research could also augment our analysis of the effects of the different governance mechanisms by considering a given firm's competencies in using them For example, leveraging norms and incentives may require unique (and different) organizational skills, and the effects of the different mechanisms can be enhanced or weakened, depending on the organizational context within which they are deployed

Finally, additional insight could be gained by further expanding the unit of analysis in relationship research For example, the analysis could be broadened to include multiple supplier relationships, which in turn may reveal different types of governance mismatch scenarios Furthermore, although we examined downstream customer outcomes and controlled for salient aspects of that relationship, we did not examine mismatches resulting from the content of the downstream relationship Our conceptual framework logically extends to more complex governance constellations, but the available data prevented us from formally testing such effects We hope that future studies will continue to expand the unit of analysis in relationship research and to consider even more complex constellations of governance mechanisms

Appendix
Response Formats, Scale Items, and Scale Source

For the following measures, a superscript "M" indicates that the measure was obtained from the manufacturer, and a superscript "C" indicates that the measure was obtained from the retail customer

1. Manufacturer Operational Performance^{C} (seven-point Likert-type scale 1 = "poor performance," 4 = "average performance," and 7 = "good performance")

Please indicate the performance of this apparel manufacturer as it relates to this garment on the dimensions listed below Please judge the performance relative to the prevailing industry norm or relative to what might have been obtained from another apparel manufacturer

- Order fulfillment cycle
- Percentage of on-time shipments
- Percentage of orders shipped complete
- Quality of deliveries
- Responsiveness to requests for change
- Replenishment cycle time

2. Supplier Solidarity Norms^{M} (seven-point Likert-type scale "completely inaccurate description/completely accurate description")

Please evaluate the degree to which the following statements accurately describe the relationship with this contractor by circling the most appropriate number on the scale (Derived from Heide and John 1992)

- Both parties in this relationship do not mind owing each other favors
- Problems that arise in the course of this relationship are treated by both parties as joint rather than individual responsibilities
- Both parties are committed to improvements that may benefit the relationship as a whole, and not only the individual parties
- The responsibility for making sure that the relationship works for both parties is shared jointly

3. Supplier Incentives^{M} (seven-point Likert-type scale "strongly disagree/agree")

The questions in this section refer to the price of the garment which you source from this contractor Please indicate your agreement or disagreement with the following statements by circling the most appropriate number on the scale (Adapted from Mishra, Heide, and Cort 1998)

- The price we pay for this garment from this contractor is higher than what competitors pay for similar garments
- The contractor earns gross margins for this garment that are higher than normal
- The price we pay for this garment exceeds what is warranted based on this contractor's manufacturing performance
- The price we pay for this garment from this contractor is higher than the competitive market price

4. Manufacturer Solidarity Norms^{M} (seven-point Likert-type scale "completely inaccurate description/completely accurate description")

The questions in this section refer to various aspects of interdepartmental relationships within your own company (e g , between merchandising and sales) Please evaluate the degree to which the following statements accurately describe these relationships in general (Derived from Heide and John 1992, Mishra, Heide, and Cort 1998)

- The departments within our company do not mind owing each other favors
- When problems occur between different departments within our firm, they are treated as joint responsibilities
- Departments within our company are committed to improvements that may benefit the company as a whole, and not only each individual department
- In our company, mutual consultation among employees from different departments is the norm

5. Manufacturer Internal Incentives^{M} (seven-point Likert-type scale "not at all important/extremely important")

Please rate which of the following factors are important considerations in deciding upon financial rewards (e g , salary increases, bonuses) for managers of the departments that are involved in making and supplying garments to the retailer (Adapted from Mishra, Heide, and Cort 1998)

- Manager's ability to meet retailer's needs
- Manager's responsiveness to retailer's needs
- Manager's ability to provide superior value to the retailer
- Manager's ability to meet retailer's satisfaction objectives

6. Relative Size Upstream^{M}/Relative Size Downstream^{C} (dummy variable)

Relative size based on annual sales for all garments (1 = supplier/customer is larger in size than apparel manufacturer, and 0 = otherwise)

7. Manufacturer TSIs Upstream^{M} (seven-point Likert-type scale "strongly disagree/agree")

Please indicate your agreement or disagreement with each statement by circling the most appropriate number on this scale (Derived from Heide and John 1992)

- We have spent significant resources to ensure that our specification for the garment fit well with this contractor's production capabilities
- The procedure and routines we have developed to produce this garment are tailored to this contractor's particular situation
- Training and qualifying this contractor have involved substantial commitments of our firm's time and money
- We have made significant investments dedicated to our relationship with this contractor
- Replacing this contractor for this particular garment would require us to write off substantial investments

8. Supplier TSIs^{M} (seven-point Likert-type scale "strongly disagree/agree")

Please indicate your agreement or disagreement with each statement by circling the most appropriate number on this scale (Derived from Heide and John 1992)

- This contractor has made significant investments in tools and equipment dedicated to supporting our firm's production of this garment
- This contractor's production system has been tailored to produce this garment for our firm
- The procedures and routines this contractor has developed for this garment are tailored to our firm's particular situation
- Our firm has unusual technological norms and standards for this garment, which have required extensive adaptation by this contractor
- Most of the training this contractor has undertaken relative to our firm's requirements for this garment would have limited usefulness m another manufacturer relationship

- If we canceled our sourcing agreement with this contractor, the contractor would be required to write off substantial investments

9. Manufacturer TSIs Downstream^{C} (seven-point Likert-type scale "strongly disagree/agree")

Please indicate your agreement or disagreement with each statement by circling the most appropriate number on this scale (Derived from Heide and John 1998)

- The procedures and routines this apparel manufacturer has developed for the garments are tailored to our firm's particular situation (item dropped because of low loading)
- Our firm has some unusual standards for the delivery of this garment, which have required extensive adaptation by this apparel manufacturer
- Most of the training this apparel manufacturer has undertaken relative to our firm's requirement for this garment would have limited usefulness in another retailer relationship
- If we canceled our purchase agreement with this apparel manufacturer, the apparel manufacturer would be required to write off substantial investments

10. Retailer TSIs^{C} (seven-point Likert-type scale "strongly disagree/agree")

Please indicate your agreement or disagreement with each statement by circling the most appropriate number on this scale (Derived from Heide and John 1992)

- The procedures and routines which we have developed to purchase this garment are tailored to this apparel manufacturer's particular situation
- Training and qualifying this apparel manufacturer have involved substantial commitments of our firm's time and money
- We have made significant investments dedicated to our relationship with this apparel manufacturer
- Replacing this apparel manufacturer for this particular garment would require us to write off substantial investments

11. Demand Volatility^{M} (seven-point Likert-type scale "strongly disagree/agree")

Please indicate your agreement or disagreement with the following statement by circling the most appropriate number on the scale

- Your firm's sales volume of this garment to this retailer is unpredictable
- Past sales data for this retailer are a poor indicator of this retailer's demand for this garment (item dropped because of low loading)
- We expect many order changes from this retailer for this garment
- It is difficult to forecast sales for this garment to this retailer

12. Quality Uncertainty

Please rate the difficulty of assessing this garment's overall quality in terms of its construction (e g , colorfastness and shrinkage), design and style for an average apparel retailer (1 = "very easy to assess," and 7 = "very difficult to assess")

13. Retailer Solidarity Norms^{C} (seven-point Likert-type scale "completely inaccurate description/completely accurate description")

Please evaluate the degree to which the following statements accurately describe the relationship with this contractor by circling the most appropriate number on the scale (Derived from Heide and John 1992)

- Problems that arise in the course of this relationship are treated by both parties as joint rather than individual responsibilities
- Both parties are committed to improvements that may benefit the relationship as a whole, and not only the individual parties
- Both parties in this relationship do not mind owing each other favors
- The responsibility for making sure that the relationship works for both parties is shared jointly

14. Retailer Pricing^{C}

Under this sourcing agreement, are prices agreed to be

- Adjustable/fixed

15. Garment Characteristic^{M} (dummy variable)

Please describe the garment that your firm is sourcing from this contractor

- Branded/not branded (1 = branded, 0 = not branded)

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Yu Ma, Kusum L. Ailawadi, Dinesh K. Gauri, & Dhruv Grewal

An Empirical Investigation of the Impact of Gasoline Prices on Grocery Shopping Behavior

The authors empirically examine the effect of gas prices on grocery shopping behavior using Information Resources Inc panel data from 2006 to 2008, which track panelists' purchases of almost 300 product categories across multiple retail formats The authors quantify the impact on consumers' total spending and examine the potential avenues for savings when consumers shift from one retail format to another, from national brands to private labels, from regular-priced to promotional products, and from higher to lower price tiers They find a substantial negative effect on shopping frequency and purchase volume and shifts away from grocery and toward supercenter formats A greater shift occurs from regular-priced national brands to promoted ones than to private labels, and among national brand purchasers, bottom-tier brands lose share, midtier brands gain share, and top-tier brand share is relatively unaffected The analysis also controls for general economic conditions and shows that gas prices have a much larger impact on grocery shopping behavior than broad economic factors

Keywords grocery expenditure, gas price effect, macroeconomic factors, retail format choice, promotions, private label

Macroeconomic conditions influence consumers' attitudes, shopping behavior, and consumption Although these conditions are not controllable by manufacturers and retailers, understanding how they affect consumers and how consumers respond to them is critical in guiding effective managerial actions This issue currently occupies center stage as the world economy tries to emerge from the most severe economic crisis in decades

A small but rich body of literature in marketing examines the impact of macroeconomic factors One stream of research describes how firms change advertising, innovation, and other "proactive" marketing activities during a recession and assesses the effectiveness of these actions (Deleersnyder et al 2009, Frankenberger and Graham 2003, Srinivasan, Rangaswamy, and Lilien 2005) Another stream studies the effect of business cycles and consumer confidence on sales of durable goods (Allenby, Jen, and Leone 1996, Deleersnyder et al 2004, Kumar, Leone, and Gaskins 1995) and private labels (Lamey et al 2007) Both streams of research are typically conducted at an aggregate level, with industry-, firm-, or product category–level sales data Yet change in consumer behavior is at the root of why these macroeconomic variables affect sales and firm performance Therefore, it is important to conduct a more disaggregate analysis (Deleersnyder et al 2004) and understand how consumers react to changes in macroeconomic factors (Grewal, Levy, and Kumar 2009)

An underlying theme in the literature is the notion that consumers' response to macroeconomic factors is a function of not just their ability to buy (as measured by current and expected future income) but also their willingness to buy (as measured by attitudes, sentiment, and so on) (Katona 1975) Conventional wisdom maintains that macroeconomic factors and consumer sentiment have an impact on durable goods sales because purchases of such products are discretionary and can be postponed when willingness to buy is low whereas nondurable products, such as groceries, are less affected because they cannot be postponed (Deleersnyder et al 2004, Lamey et al 2007)

The focus of the current research is on a macroeconomic factor that is qualitatively different from business cycles and consumer sentiment and has been prominent in recent years—namely, the price of gasoline Since 2006, the price of a gallon of regular gasoline has varied widely, from lows of just over $2 00 to highs of more than $4 00 Gasoline demand is fairly inelastic (Brons et al 2008, Greening et al 1995), so expenditure on gas goes up in accordance with its price A U S household earning a median income spent 11 5% of that income on gas in July 2008, up from 4 6% in 2003 (*The Wall Street Journal* 2008) When the price of gas increases sharply, consumers have less dispos-

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© 2011, American Marketing Association
ISSN 0022-2429 (print), 1547-7185 (electronic)

Journal of Marketing
Vol 75 (March 2011), 18–35

able income, feel significant financial hardship, become more price conscious, and must find ways to reduce spending in other areas (Du and Kamakura 2008, Jacobe 2006) Consistent with this, Hamilton (2008) notes in his recent review of oil and the economy that the key mechanism whereby energy price shocks affect the economy is through a disruption in spending on goods and services other than energy

Thus, the impact of gas prices on consumer shopping behavior derives not just from psychological willingness to buy but also from the immediate economic ability to buy Grocery products individually cost little relative to overall income However, after housing and transportation, they form the largest percentage of U S households' annual expenditures For example, expenditure on food at home for the average household was 5 6% of total income after taxes in 2007, exceeding other expense categories such as apparel, entertainment, and health care (Bureau of Labor Statistics 2007) Furthermore, grocery shopping is done frequently, generally more than once a week, so there is plenty of opportunity to make adjustments in purchases Therefore, expenditures on grocery products provide a substantial and flexible means to adjust spending in response to unexpected changes in discretionary income In summary, grocery products may be relatively immune to general economic conditions and business cycles, but this is not likely to be the case with rising gas prices

However, there is little systematic research on the impact of gas prices on consumers' shopping behavior An exception is the work of Gicheva, Hastings, and Villas-Boas (2010), using Consumer Expenditure Survey data (Bureau of Labor Statistics 2007), they find that expenditures on food outside the home decrease by 56% and expenditures on food purchased at grocery stores increase slightly with a 100% increase in gas price They also use sales data in four food categories from a California grocery chain to show that consumers substitute away from regular shelf-price products and toward promotional items to save money on overall grocery expenditures

The objective of our research is to provide a comprehensive analysis of the impact of gas prices on consumers' grocery shopping behavior Consumers can alter how much they purchase, how often they purchase, and how much they spend on their purchases, which in turn is a function of what they buy and where they buy it We not only quantify the impact on households' shopping frequency, total purchase volume, and spending but also examine the avenues they use to save money on grocery shopping, such as shifting from one retail format to another, from national brands to private labels, from regular-priced products to promotional purchases, and from higher-priced national brands to lower-priced ones Such an analysis is important not only for researchers and policy makers but also for manufacturers and retailers, which must determine the best way to respond to and perhaps preempt changes in shopping behavior in an era of "peak oil" and sustained volatility in energy prices As we discuss in the next section, the answers are not obvious

We conduct our analysis using a household panel data set from Information Resources Inc The data set captures grocery shopping information across multiple retail formats of approximately 1000 panelists from a major U S metropolitan area The data are from January 2006 to October 2008 and span panelists' purchases of almost 300 product categories We supplement these data with gas prices in the same metropolitan area obtained from the Department of Energy Information Administration Web site Some unique features of these data make them especially useful for our research First, we cover not just a few product categories but rather the vast majority of consumer packaged goods products purchased by consumers Second, we cover both the traditional grocery store and drugstore channels and the regular and supercenter stores of mass merchants (including Wal-Mart) and warehouse clubs Third, substantial variation in gas prices occurred during the period of our data Fourth, we control for general economic conditions to isolate and contrast the impact of gas prices

We organize the remainder of this article as follows In the next section, we present the conceptual framework for our model and analysis, drawing on relevant literature whenever possible Then, we discuss our data and methodology Following this, we present our empirical results and discuss the implications of our findings for researchers and managers

Conceptual Development

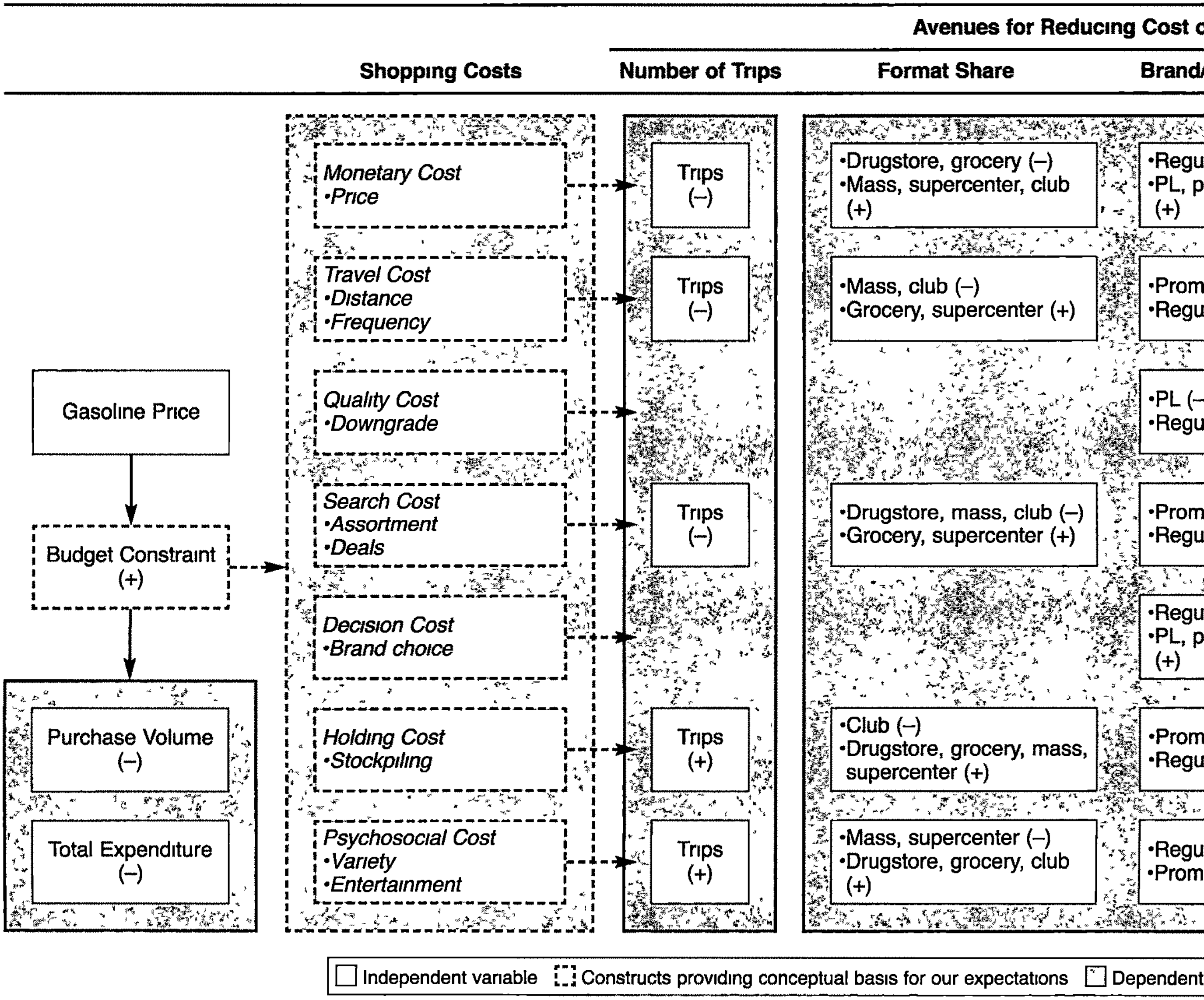
Overview

Figure 1 depicts the framework that guides our expectations and analysis Gas prices affect consumers' budget constraint because an increase in gas prices directly reduces the income available for other purchases, given the relative inability to reduce gas consumption in the short run The budget constraint requires consumers to reduce their total spending They can do this by lowering their purchase volume (consumption) and/or by reducing the cost of their purchases Cost can be reduced by shifting to less expensive retail formats, private label products or national brands on promotion, and/or lower-price-tier national brands (Griffith et al 2009) In addition, consumers can adjust the number of shopping trips they make

However, consumers' shopping utility is not just a function of the quantity of products purchased and their monetary cost Although the monetary cost may be most salient in the face of gas price–induced budget constraints, consumers also experience other costs and benefits of shopping, such as the opportunity cost of time spent in travel and search (Bell, Ho, and Tang 1998, Blattberg et al 1978, Marmorstein, Grewal, and Fishe 1992), other utilitarian benefits of quality and decision simplicity, and psychosocial benefits of self-expression and entertainment (Ailawadi, Neslin, and Gedenk 2001, Chandon, Wansink, and Laurent 2000, Urbany, Dickson, and Kalapurakal 1996) Figure 1 includes the major elements of total utility identified in prior research but represents them as costs for exposition simplicity

As gas prices increase and tighten consumers' budget constraint, there is pressure to cut monetary costs by searching for lower prices However, the reduction in monetary

FIGURE 1
Guiding Framework


Avenues for Reducing Cost o
Shopping Costs
Number of Trips
Format Share
Brand/
Gasoline Price
Budget Constraint (+)
Purchase Volume (–)
Total Expenditure (–)
Monetary Cost •Price
Travel Cost •Distance •Frequency
Quality Cost •Downgrade
Search Cost •Assortment •Deals
Decision Cost •Brand choice
Holding Cost •Stockpiling
Psychosocial Cost •Variety •Entertainment
Trips (–)
Trips (–)
Trips (–)
Trips (+)
Trips (+)
•Drugstore, grocery (–) •Mass, supercenter, club (+)
•Mass, club (–) •Grocery, supercenter (+)
•Drugstore, mass, club (–) •Grocery, supercenter (+)
•Club (–) •Drugstore, grocery, mass, supercenter (+)
•Mass, supercenter (–) •Drugstore, grocery, club (+)
•Regu •PL, p (+)
•Prom •Regu
•PL (– •Regu
•Prom •Regu
•Regu •PL, p (+)
•Prom •Regu
•Regu •Prom
Independent variable
Constructs providing conceptual basis for our expectations
Dependent

Notes NB = national brand, and PL = private label costs must be traded off against possible increases in other costs Travel costs refer to the distance and how frequently the consumer must travel for shopping, quality costs are driven by whether the consumer downgrades to a less preferred brand, search costs are driven by how easy it is to find preferred products and deals, decision costs refer to how easy it is to decide what to buy, holding costs are driven by whether shopping is done in bulk, and psychosocial costs refer to how much enjoyment the shopping activity provides

We do not directly observe all these costs, but they provide an important conceptual basis for our work (for a similar conceptual development in other contexts, see Geyskens, Gielens, and Dekimpe 2002, Narasimhan, Neslin, and Sen 1996) In the following discussion, we consider the tradeoffs among these costs in developing expectations about how gas prices affect consumers' overall shopping as well as the allocation of their purchases to different formats, promotions, and brands Note that we control for general economic conditions through the gross domestic product (GDP) growth variable, which is a widely accepted measure of economic health[1] Our expectation, based on prior research and conventional wisdom, is that the impact of this variable is weaker than that of gas price

Effect of Gas Prices on Overall Shopping

Total purchase volume The lower disposable income resulting from higher gas prices puts pressure on consumers to buy and consume less Because consumers are also trying to save money by eating at home more often than at restaurants (Gicheva, Hastings, and Villas-Boas 2010) and spending more time at home (Mouawad and Navarro 2008), there is a positive substitution effect for food products Across all grocery products, however, we expect a negative effect of gas prices on total purchase volume

Total dollar spending Total spending comprises purchase volume and the cost of the purchases To the extent that consumers reduce purchase volume, spending should decrease as well Consumers should also try to reduce the cost of their purchases, especially because retail prices tend to go up as energy costs rise We examine the avenues by which the cost of purchases may be reduced subsequently

Shopping trips The most direct result of higher gas prices should be to reduce travel costs as much as possible This implies a reduction in the number of shopping trips However, consumers with low search costs can shop frequently to make better use of promotions, thus saving money (Gauri, Sudhir, and Talukdar 2008, Putrevu and Ratchford 1997, Urbany, Dickson, and Kalapurakal 1996) Gauri, Sudhir, and Talukdar (2008) find that households can obtain savings of up to 68% if they engage in either temporal (over time) or spatial (across stores) search, and they can increase those savings to 76% if they search across both stores and time Furthermore, consumers must trade off the reduced travel cost against the psychosocial value from shopping and the higher inventory holding cost they incur if they shop less frequently Thus, as Figure 1 shows, we cannot predict whether gas prices will have a negative or positive effect on the number of shopping trips for the average household

Avenues for Reducing Shopping Expenditure

Effect of gas prices on retail format choice Average price levels are lower in mass stores, supercenters, and warehouse clubs than in drugstores and grocery stores, and there is considerable, though not complete, overlap in the product categories carried by different formats, making it feasible for consumers to shift their spending from one format to another (Luchs, Inman, and Shankar 2007) Therefore, monetary costs should drive consumers to shift from drugstores and grocery stores to the former formats However, consumers must trade off this benefit against other costs Mass stores, supercenters, and warehouse clubs are not as densely located as drugstores and grocery stores, and their assortment is not as deep as grocery stores, thus increasing travel and search costs Apart from membership fees, warehouse clubs require consumers to buy in bulk, increasing their inventory holding costs However, supercenters and warehouse clubs offer one-stop shopping, which can reduce the number of shopping trips and travel costs[2] With special displays and frequently changing layouts, especially in peripheral parts of drugstores and grocery stores, and "treasure hunts" for frequently changing assortment in some warehouse clubs, these formats may offer more entertainment and exploration appeal than mass store and supercenter formats

Prior research has shown that all these costs are relevant to format choice For example, Bell, Ho, and Tang (1998) show that consumers consider the sum of fixed (e g , traveling to and from the store) and variable (product prices and quantities in the basket) costs of shopping when making their store choice Similarly, Bhatnagar and Ratchford (2004) argue that format choice is a function of consumers' costs of travel, inventory holding, and so forth Figure 1 shows the net impact of gas price on format choice Given the countervailing effects of the different costs, the net impact of gas price on the share of each format is clearly an empirical question[3]

Effect of gas prices on brand and promotion choice National brands are sold at retail prices that are 20%–30% higher than private labels (Ailawadi and Harlam 2004), and penetration of private labels has increased substantially in the past decade, with most retailers offering private label products in a wide range of categories (Kumar and Steenkamp 2007) This makes shifting from national brands to private labels an easy way for households to save money on their grocery shopping Value-conscious consumers can also save money by searching for promotions, and both private labels and promotions reduce decision costs by making it easy for consumers to decide what to buy (Ailawadi, Neslin, and Gedenk 2001, Chandon, Wansink, and Laurent 2000)

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[1] We obtained similar results with the Conference Board's Composite Index of Coincident Indicators, which combines four individual factors payroll employment, personal income, industrial production, and manufacturing and trade sales

[2] We distinguish between traditional mass stores, which have less square footage and carry a smaller assortment of categories, and the larger supercenter format, whose assortment is broader and includes perishable food products

[3] Consumers could also shop more at convenience stores because they are conveniently located, often together with a gas station However, we do not include this format in our analysis, because it accounts for less than 1% of total spending in our data

However, the temporal and spatial search for promotions and the pressure to stock up on deals increase travel, search, and inventory holding costs (Private labels do not increase these costs because of their everyday low prices) However, despite the emergence of "premium" private labels, in general U S consumers perceive a quality cost in downgrading to private labels, whereas they may be able to buy preferred brands on promotion In addition, promotions offer psychosocial benefits, while private labels do not Overall, therefore, we expect a negative effect of gas prices on regular-priced national brand share and a positive effect on private label and promotional purchases of national brands An empirical question, however, is whether the positive impact is greater for promotions or private labels

Effect of gas prices on national brand price tier share Despite private labels' price advantage, national brands still have a unit market share of more than 75% across consumer packaged goods categories (Private Label Manufacturers Association 2009), in support of Sethuraman's (2000) finding that consumers are willing to pay a significant premium for national brands even if a private label is of equivalent quality Consumers can save money by switching from high- to mid- and low-price-tier national brands even if they are not willing to switch to private labels This suggests a positive effect of gas prices on lower-tier share and a negative effect on top-tier share

However, consumers incur a quality cost in switching away from high-tier national brands to low-tier ones Those to whom monetary savings are important and quality cost is not are likely to switch to private labels, leaving the more quality conscious consumers to buy national brands The literature on asymmetric price and context effects shows that consumers of low-tier national brands are more likely to switch to private labels while higher-tier national brands are more insulated (Blattberg and Wisniewski 1989, Geyskens, Gielens, and Gijsbrecht 2010, Pauwels and Srinivasan 2004, Sethuraman, Srinivasan, and Kim 1999) Thus, despite the conventional wisdom that top-tier brands hurt when times are tight, we cannot predict the effect of gas prices on bottom-, mid-, and top-tier shares among national brand purchasers

Role of Demographic Variables

Although economic costs are likely to be more salient than psychosocial ones in the face of a significant budget constraint, it is reasonable to expect heterogeneity in how consumers make trade-offs among the various costs in Figure 1 Two overarching consumer characteristics that determine these costs and consequent shopping behaviors are financial constraints and time constraints (Ailawadi, Neslin, and Gedenk 2001, Blattberg et al 1978, Fox, Montgomery, and Lodish 2004, Luchs, Inman, and Shankar 2007, Marmorstein, Grewal, and Fishe 1992, Urbany, Dickson, and Kalapurakal 1996) Financially constrained consumers are more likely to emphasize monetary and travel costs, and time-constrained consumers are more likely to emphasize travel, search, and decision costs To preserve parsimony and strong theoretical grounding, we select three key demographic variables that are directly relevant to financial and time constraints household income, presence of children, and presence of at least one household head who does not work outside the home Income drives financial constraints, and the latter two variables drive time constraints [4]

We expect that these demographic variables have main effects on the various aspects of purchase behavior we study and also may moderate the impact of gas prices For example, lower-income households are more likely to engage in savings behaviors (e g , smaller supermarket and drugstore shares, greater private label and promotion shares, smaller top-tier national brand share) and also may be more sensitive to gas price increases In contrast, time-constrained households may be less likely to engage in search and more attracted to one-stop shopping (i e , lower promotion share, higher supercenter share) We follow Ailawadi, Neslin, and Gedenk (2001) and Fox, Montgomery, and Lodish (2004) in including demographics to account for heterogeneity but do not develop explicit hypotheses about their effects

Data

We obtained an Information Resources Inc panel data set from a major metropolitan area for this study The data capture household-level shopping and spending of 1389 panelists across stores and formats, including all items bought in 297 categories tracked by the firm Purchases are tracked over 147 weeks between 2006 and 2008 For each household, we also obtained information on key demographic variables, including household income, household size, age, and employment status Finally, we obtained gasoline prices in the metropolitan area during the same period from the Department of Energy Information Administration Web site, and we obtained quarterly GDP growth rate figures from the Bureau of Economic Analysis Web site Figure 2 depicts both gas prices and GDP growth during the period of our study

Table 1 provides the descriptive statistics Our unit of analysis is a household and month (e g , Fox, Montgomery, and Lodish 2004) The average household spends $270 per month across 9 31 shopping trips Note that total purchase volume is also measured in dollars This is because the vastly different units across categories (e g , pounds, gallons, square feet) cannot be aggregated in a meaningful way We use an average category price per unit volume to aggregate purchase volume, so the resultant variable is in dollar units However, variations in this variable occur only because of volume changes, not price changes, so we can

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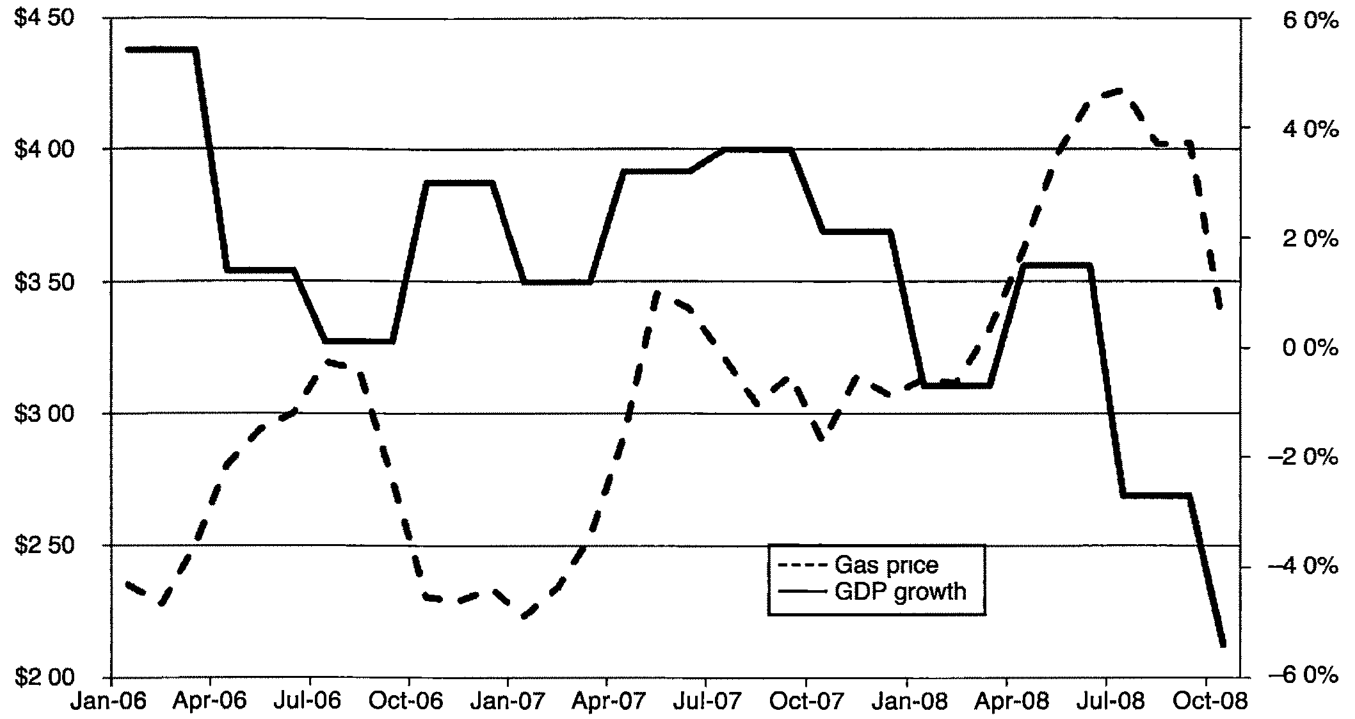
[4] These demographics are also related to other characteristics For example, households with children have greater needs, and those who do not work outside the home are more likely to be older and retired

FIGURE 2
Gas Prices and GDP Growth Rates



Notes: Mean (SD) of gas price is $3.07 ($.58), and mean (SD) of GDP growth is 1.19% (2.29%).

assess the impact of gas prices on purchase volume by modeling variation in this variable. Table 1 also summarizes marketing-mix differences across formats and how households allocate their purchases across formats, brands, and promotions.

Method

In line with Figure 1, we specify and estimate models for four sets of shopping decisions. The first set pertains to overall shopping and includes three dependent variables—number of shopping trips, purchase volume, and total expenditure per month. The second set pertains to how consumers allocate their total purchase volume across five different retail formats, the third set pertains to the share of regular versus promotional national brands and private label in their total purchase volume, and the fourth set pertains to their share of top-, mid-, and bottom-price-tier national brands.

Each model contains three groups of explanatory variables. The first group accounts for heterogeneity in preferences among households using demographic variables and the household's value of the dependent variable during a two-month initialization period (Briesch, Chintagunta, and Fox 2009; Bucklin, Gupta and Han 1995). The second group includes the macroeconomic variables of central interest to our research: gasoline price and GDP growth rate. We allow for heterogeneity in response to these variables by interacting them with the demographic variables.

The final group contains the control variables that also drive households' shopping, including distance traveled for shopping and the key retailer marketing-mix variables (i.e., net price, assortment size, and percentage of assortment devoted to private label). We compute the variables in this group at different levels of aggregation as appropriate for each set of models, using household-specific weights obtained from an initialization period. Detailed definitions of the variables for each set of models appear in the Appendix.

Because retailers may adjust their marketing mix according to local demand shocks and gas prices, we control for potential endogeneity in the three marketing-mix variables by using their values from markets other than the focal market as instruments (for examples of similar instruments, see Chintagunta, Kadiyali, and Vilcassim 2006; Nevo 2001).

Total Trips, Purchase Volume, and Dollar Spending

We provide the model specifications for the three total monthly shopping variables subsequently. We specify all three equations in log-log form because households vary widely in the magnitudes of these dependent variables and this specification provides coefficients in percentages rather than absolute terms.[5] The only variables not in log form are the two dummy variables (AtHome and Kids) and the GDP variable, which can take on negative values.

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[5] The fit of the log-log specification was as good as or better than the linear specification, particularly in holdout sample comparisons.

TABLE 1
Descriptive Statistics

Variable	Mean Overall	 Drugstore	 Grocery Store	 Mass Store	 Supercenter	 Club
Price index	1 00	1 01	1 15	99	96	89
Assortment index	1 00	54	2 72	97	60	17
Private label % of assortment	19 95	20 58	21 77	14 85	16 06	12 84
Top-tier % of national brand assortment	20 10	20 12	20 28	18 69	17 38	18 33
Midtier % of national brand assortment	36 38	36 76	36 36	36 59	36 11	36 51
Bottom-tier % of national brand assortment	43 52	43 12	43 36	44 72	46 51	45 16
Regular-priced national brand share (%)	57 70	48 34	51 78	73 16	73 44	79 66
Promoted national brand share (%)	18 76	22 98	23 86	7 56	6 79	1 88
Private label share (%)	23 54	28 69	24 36	19 28	19 77	18 46
Top-tier national brand share (%)	10 14	14 73	8 87	11 80	10 89	8 27
Midtier national brand share (%)	32 65	32 82	32 62	31 49	32 25	31 30
Bottom-tier national brand share (%)	57 21	52 44	58 51	56 71	56 86	60 43
Monthly trips (n)	9 31	1 28	5 85	1 33	38	47
Monthly spending ($)	269 93	19 89	180 83	32 32	12 25	24 64
Monthly purchase volume ($)	260 19	21 19	171 98	32 08	12 00	22 94
Distance to households (miles)	3 11	1 20	3 44	3 65	11 95	5 52
Overall share (%)	—	8 14	66 10	12 33	4 61	8 82
Share households with no head at home	—	6 40	66 29	13 28	5 09	8 94
Share households with ≥ 1 head at home	—	10 06	65 88	11 28	4 09	8 68
Share households with > average income	—	5 97	64 69	12 54	4 79	12 00
Share households with < average income	—	10 02	67 31	12 15	4 46	6 07
Share households with no children at home	—	9 60	66 97	11 38	4 11	7 93
Share households with children at home	—	4 54	63 94	14 67	5 85	11 00

$$
\begin{aligned}
(1)\ \ln(\text{Numtrps}_{ht}) = {} & \beta_1^1 + \beta_2^1 \ln(\text{Numtrps}_{h0}) + \beta_3^1 \ln(\text{Inc}_h) \\
& + \beta_4^1 \text{AtHome}_h + \beta_5^1 \text{Kids}_h + [\beta_6^1 + \beta_7^1 \ln(\text{Inc}_h) \\
& + \beta_8^1 \text{AtHome}_h + \beta_9^1 \text{Kids}_h] \times \ln(\text{GPrice}_t) \\
& + [\beta_{10}^1 + \beta_{11}^1 \ln(\text{Inc}_h) + \beta_{12}^1 \text{AtHome}_h \\
& + \beta_{13}^1 \text{Kids}_h] \times \text{GDP}_t + \beta_{14}^1 \ln(\text{Dist}_h) \\
& + \beta_{15}^1 \ln(\text{NPrice}_{ht}) + \beta_{16}^1 \ln(\text{AssrtSize}_{ht}) \\
& + \beta_{17}^1 \ln(\text{PctPL}_{ht}) + \varepsilon_{ht}^1,
\end{aligned}
$$

$$
\begin{aligned}
(2)\ \ln(\text{Dolspnd}_{ht}) = {} & \beta_1^2 + \beta_2^2 \ln(\text{Dolspnd}_{h0}) + \beta_3^2 \ln(\text{Inc}_h) \\
& + \beta_4^2 \text{AtHome}_h + \beta_5^2 \text{Kids}_h + [\beta_6^2 + \beta_7^2 \ln(\text{Inc}_h) \\
& + \beta_8^2 \text{AtHome}_h + \beta_9^2 \text{Kids}_h] \times \ln(\text{GPrice}_t) \\
& + [\beta_{10}^2 + \beta_{11}^2 \ln(\text{Inc}_h) + \beta_{12}^2 \text{AtHome}_h \\
& + \beta_{13}^2 \text{Kids}_h] \times \text{GDP}_t + \beta_{14}^2 \ln(\text{Dist}_h) + \\
& + \beta_{15}^2 \ln(\text{NPrice}_{ht}) + \beta_{16}^2 \ln(\text{AssrtSize}_{ht}) \\
& + \beta_{17}^2 \ln(\text{PctPL}_{ht}) + \varepsilon_{ht}^2, \text{ and}
\end{aligned}
$$

$$
\begin{aligned}
(3)\ \ln(\text{Purvol}_{ht}) = {} & \beta_1^3 + \beta_2^3 \ln(\text{Purvol}_{h0}) + \beta_3^3 \ln(\text{Inc}_h) \\
& + \beta_4^3 \text{AtHome}_h + \beta_5^3 \text{Kids}_h + [\beta_6^3 + \beta_7^3 \ln(\text{Inc}_h) \\
& + \beta_8^3 \text{AtHome}_h + \beta_9^3 \text{Kids}_h] \times \ln(\text{GPrice}_t) \\
& + [\beta_{10}^3 + \beta_{11}^3 \ln(\text{Inc}_h) + \beta_{12}^3 \text{AtHome}_h \\
& + \beta_{13}^3 \text{Kids}_h] \times \text{GDP}_t + \beta_{14}^3 \ln(\text{Dist}_h) + \\
& + \beta_{15}^3 \ln(\text{NPrice}_{ht}) + \beta_{16}^3 \ln(\text{AssrtSize}_{ht}) \\
& + \beta_{17}^3 \ln(\text{PctPL}_{ht}) + \varepsilon_{ht}^3,
\end{aligned}
$$

where

Numtrps_{ht} = number of shopping trips made by household h in month t,

Dolspnd_{ht} = total grocery spending in dollars by household h in month t,

Purvol_{ht} = total purchase volume by household h in month t measured in constant dollars,

Numtrps_{h0} = average number of trips per month by household h in initialization period,

Purvol_{h0} = average purchase volume per month by household h in initialization period,

Dolspnd_{h0} = average dollar spending per month by household h in initialization period,

Inc_h = annual income of household h,

AtHome_h = 1 if at least one household head is at home (not working) and 0 if otherwise,

Kids_h = 1 if household h has children less than 18 years of age at home and 0 if otherwise,

GPrice_t = average price per gallon of regular gas in month t,

GDP_t = annualized real GDP growth rate in the quarter of month t,

Dist_h = distance traveled by household h for shopping,

NPrice_{ht} = net price facing household h in month t,

AssrtSize_{ht} = assortment size facing household h in month t, and

PctPL = percentage of assortment size facing household h in month t that is private label

Share Allocation Models

The share models are of the following form

$$(4)\ \ln(\text{Share}_{jht}) = \beta_1^j + \beta_2^j \ln(\text{Share}_{jh0}) + \beta_3^j \ln(\text{Inc}_h) \\ + \beta_4^j \text{AtHome}_h + \beta_5^j \text{Kids}_h + [\beta_6^j + \beta_7^j \ln(\text{Inc}_h) \\ + \beta_8^j \text{AtHome}_h + \beta_9^j \text{Kids}_h] \times \ln(\text{GPrice}_t) \\ + [\beta_{10}^j + \beta_{11}^j \ln(\text{Inc}_h) + \beta_{12}^j \text{AtHome}_h \\ + \beta_{13}^j \text{Kids}_h] \times \text{GDP}_t + \beta_{14}^j \ln(\text{RelDist}_{jh}) \\ + \beta_{15}^j \ln(\text{RelNPrice}_{jht}) + \beta_{16}^j \ln(\text{RelAssrtSize}_{jht}) \\ + \beta_{17}^j \ln(\text{RelPctPL}_{jht}) + \varepsilon_{ht}^j,$$

where subscript j refers to the jth alternative within each set (one of five retail formats, regular or promotional national brand or private label, one of three national brand price tiers) and distance and the marketing-mix variables for an alternative are computed relative to the weighted average across all alternatives in the set to account for cross-effects parsimoniously We categorize national brands as bottom, mid-, or top tier depending on whether their average retail prices are in the lowest, middle, or top third of the national brand price distribution All other variables are as defined previously

Format shares have a significant number of zero values in our data because not all households shop at all five formats every month Therefore, we use a two-tiered model in which a probit governs the zero–nonzero format choice and a regression of log share determines the magnitude of nonzero format share (Ailawadi and Harlam 2009, Wooldridge 2002) Because the percentages of zero values for the brand/promotion and national brand tier shares are small (generally between 5% and 5% of the observations), a two-tiered model is not needed for these models

Consistent with the overall shopping models, we use a log-log formulation The independent variables in all share models are as shown in Equation 3 Note that the relative marketing-mix variables are defined appropriately in each case—that is, relative to the weighted average of all formats for the format share models, relative to the weighted average of national brands and private label for the brand/promotion share models, and relative to the weighted average of the three price tiers for the national brand tier share models We include the RelPctPL variable only in the format share models because it is not relevant in the others, and the distance variable is relative only for format share models because it does not vary across alternatives for the other share models

Results

We specify some overarching points and then report specific results First, we account for potential endogeneity of marketing-mix variables in all the models, using the instrumental variables noted previously The first-stage regressions confirm that the instruments are strong, the R-squares are in the range of 40 to 80, and the F-statistics far exceed cutoffs recommended in the econometrics literature Second, we mean-center gas price, GDP growth, and income so that we can interpret the coefficients of the gas price and GDP growth variables as their respective effects on the dependent variable for households with no head at home, no children, and average income Third, we checked for multicollinearity and did not find it to be a concern Table 2 shows the correlation matrix for the variables in the overall shopping models The highest correlation among the independent variables is between AssrtSize and PctPL Correlations of main variables with their interactions are substantial, as we expected, but none are high enough to be of concern We also checked variance inflation factors, and none are greater than 5 Fourth, we perform three F-tests for the role of demographics in each model to test the joint significance of their main effects, interactions with gas price, and interactions with GDP growth, respectively[6] We include these effects only when the corresponding F-tests are significant Fifth, the initialization period values of dependent variables that capture unobserved heterogeneity are highly significant and positive in all the models, thus confirming that preferences are relatively stable

Effect of Gas Price on Shopping Behavior

Overall shopping Table 3 presents the estimates of our overall shopping models For the coefficient for gas price, we find that monthly number of shopping trips, expenditure, and purchase volume all decrease significantly as gas prices increase The coefficient can be interpreted as an elasticity, that is, for a 100% increase in gas prices, the average household reduces these three variables by approximately 20%, 6%, and 14%, respectively

Retail format shares Table 4 summarizes the results of the format share models Because grocery store format share is zero for less than 3% of the observations, it is not meaningful to estimate a probit visit model for that format For all other formats, we report both probit and log-share model results

As gas prices increase, consumers shift to one-stop shopping formats, that is, they visit drugstores and mass stores less often and supercenters more often High-income households are particularly likely to shift from mass stores to supercenters Because the probit model coefficients cannot be directly interpreted as effects on visit probability, we use them to compute the change in predicted visit probability when gas price increases by 100% from $2 00 to $4 00 per gallon, all other model variables are held at their means We find that the predicted visit probability decreases from 53 8% to 49% for drugstores and from 58 8% to 54% for mass stores, while it increases from 13 9% to 18 5% for supercenters

The impact of gas price on the share of spending at each format, given that the format is visited, is also consistent with consolidation of shopping to offset travel costs As gas prices increase, households visit drugstores and mass stores less often, but when they do visit these formats, the share of their total spending at these formats goes up by 38 2% and

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[6] We also tested for interactions of gas price with distance and net price Because these interactions were significant and negative only in the shopping trip model, we do not include them here

TABLE 2
Correlations Between Shopping Model Variables

	Num-trps	Dol-spnd	Purvol	Dist	NPrice	Assrt-Size	PctPL	GPrice	GDP	Income	Kids	At Home	GPrice × Income	GDP × Income	GPrice × Kids	GDP × Kids	GPrice × At Home	GDP × At Home
Numtrps	1																	
Dolspnd	51	1																
Purvol	54	95	1															
Dist	− 02	03	05	1														
NPrice	− 02	− 02	− 06	− 01	1													
AssrtSize	01	02	00	− 12	13	1												
PctPL	03	− 05	− 09	− 19	21	83	1											
GP	− 03	− 02	− 06	− 01	12	− 07	20	1										
GDP	01	− 01	02	01	− 12	02	− 18	− 45	1									
Income	− 11	12	07	00	− 05	− 05	− 11	− 00	− 00	1								
Kids	− 08	16	18	07	− 11	− 04	− 12	− 01	01	22	1							
At home	10	− 03	− 01	− 01	05	− 02	05	00	− 00	− 28	− 17	1						
GP × income	− 01	− 01	− 01	00	− 01	− 00	− 01	00	− 00	00	− 01	00	1					
GDP × income	01	01	01	− 00	− 00	− 00	− 00	− 00	00	− 01	01	00	− 45	1				
GP × kids	− 02	− 01	− 03	− 01	07	− 04	10	54	− 24	− 01	− 01	00	18	− 08	1			
GDP × kids	01	− 00	02	− 00	− 07	01	− 09	− 24	53	01	01	− 00	− 08	18	− 45	1		
GP × at home	− 02	− 02	− 04	− 01	08	− 05	15	69	− 31	00	− 00	00	− 20	09	27	− 12	1	
GDP × at home	01	− 00	02	01	− 09	01	− 13	− 31	69	00	00	− 00	09	− 20	− 12	27	− 45	1

Notes All variables are in log form except GDP and dummy variables

TABLE 3
Overall Shopping Model Estimates

Variable	Log Number of Trips	Log Total Spending	Log Total Purchase Volume
Intercept	3 870**	870	336
	(6 70)	(1 41)	(53)
Log gas price	– 201**	– 057*	– 144**
	(–8 82)	(–2 37)	(–5 81)
GDP growth	002	– 009**	– 005**
	(1 29)	(–5 52)	(–3 04)
Log distance	– 026**	– 009*	– 006
	(–7 13)	(–2 49)	(–1 48)
Log net price	– 265**	– 105**	– 189**
	(–7 38)	(–2 80)	(–4 89)
Log assortment	– 203**	094*	122**
	(–5 65)	(2 43)	(3 06)
Log % private label	681**	– 324*	– 484**
	(5 18)	(–2 28)	(–3 30)
Log income	– 022**	021**	– 004
	(–5 23)	(4 76)	(– 83)
At home	020**	016**	020**
	(2 62)	(3 12)	(3 30)
Children	– 087**	033**	059**
	(–13 12)	(4 79)	(8 33)
Heterogeneity variable	690**	569**	561**
	(151 38)	(114 58)	(108 99)
N	32178	32178	32178
Adjusted R^2	429	343	329

*$p <$ 05
**$p <$ 01
Notes Coefficient estimates are reported with t-statistics in parentheses

21 8%, respectively Households with children reduce their share of spending at grocery stores by 8 7% and shop more often at supercenters, increasing their share of spending there by 50% Higher-income households also increase their share of spending at supercenters conditional on a visit

To compute the net effect of gas price on the unconditional share of each format, we compute both the predicted visit probability and the predicted conditional share at a gas price of $2 00, holding all other model variables at their means The product of the two provides the predicted unconditional share at a gas price of $2 00 By doing the same thing at a gas price of $4 00, we can compute the change in predicted unconditional share of each format when gas price increases by 100% from $2 00 to $4 00 As a percentage of the average share of the format (Table 1), these changes are –3 6%, +10%, +5%, and +24.9% for grocery store, drugstore, mass store, and supercenter formats, respectively[7]

Brand and promotion shares The first three columns of Table 5 show estimates of the national brand/private label/promotion share models Consistent with our expectations, an increase in gas price decreases the share of regular-priced national brands For the average income household with no head at home, when gas price increases by 100%, the share of regular-priced national brands decreases by 11 9%, the share of promoted national brands increases by 28 8%, and there is no significant change in private label share That the private label does not make gains in this group may be partly due to the shift of households from grocery stores, which have more private label assortments, to supercenters, which have fewer private label assortments (see Table 1) We do find an almost 10% increase (128 – 031 = 097) in private label share among households with at least one head at home, and these households constitute 48% of the panel Such households shop more at drugstores, which have a fairly large private label assortment (see Table 1) These households also are more prone to buy private labels anyway (see the main effect of "At home" on private label share in Table 5), and higher gas prices seem to reinforce this savings behavior

Surprisingly, high-income households are more likely than others to shift from regular-priced national brands to promotional purchases This is contrary to what we would expect from their financial constraints, but it is important to note that low-income households already have lower shares of regular-priced national brands and higher shares of promotional national brands and private labels (see the main effect of income), so when gas prices increase, high-income households have more "room" to shift

National brand tier shares The last three columns of Table 5 show estimates of the national brand tier share models As we expected, higher gas prices increase the share of middle-tier national brands Furthermore, they do not affect the share of top-tier brands, and they actually decrease the share of bottom-tier brands For a 100% increase in gas price, bottom-tier share of the average household's national brand purchases decreases by 9 6%, while midtier share increases by 5 7%

Heterogeneity in gas price effect across demographic groups Interactions of demographic variables with gas price are not significant for the most part, showing that the gas price effect is not dramatically different across demographic groups When there is a difference, it is generally due to the presence of children and household income The effect of children is largely consistent with the notion that such households have higher requirements but are more constrained by time Therefore, the negative effect of gas price on shopping trips is more pronounced for these households These households also switch more than others to supercenters because they are attracted by one-stop shopping

The effect of income is largely consistent with fewer financial constraints High-income households can afford to make larger dollar outlays, so they shop less frequently, spend more, spend more at warehouse clubs, and are more likely to shift to supercenters when gas price increases They are also more likely to shift from regular-priced national brands to promotional ones as gas price increases, but as we noted previously, they have more room to shift because they buy more regular-priced and fewer promotional national brands overall They are also heavier buyers of top-tier national brands, so it makes sense that they take

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[7] In share points, the 3 6% decrease in grocery share is larger than the 24 9% increase in supercenter share, given the much larger average share of the grocery format

TABLE 4
Format Share Model

	Grocery Store	Drugstore		Mass Store		Superc
Variable	**Log Share**	**Probit**	**Log Share**	**Probit**	**Log Share**	**Probit**
Intercept	– 192***	1 432***	– 985***	1 334***	–1 059***	918***
	(–32 87)	(15 75)	(–11 04)	(43 15)	(–35 33)	(20 53)
Log gas price (GPrice)	– 010	– 173**	382***	– 209***	218***	178**
	(– 36)	(–2 34)	(5 19)	(–2 87)	(2 71)	(2 04)
GDP growth	005***	– 005	– 010**	004	– 008**	– 014***
	(3 38)	(–1 18)	(–2 29)	(1 04)	(–1 96)	(–2 87)
Log relative distance	– 006	– 021**	060***	– 088***	051***	– 194***
	(– 90)	(–2 42)	(6 25)	(–9 06)	(4 62)	(–20 64)
Log relative net price	–1 023***	– 313	– 554**	– 352*	1 214***	512**
	(–4 77)	(–1 51)	(–2 53)	(–1 92)	(5 80)	(2 47)
Log relative assortment	129***	– 028	414***	048	– 171**	004
(3 36)	(– 41)	(5 85)	(75)	(–2 30)	(07)	(13)
Log relative % private label	–2 169***	– 421	–1 931***	318	1 029***	032
	(–13 02)	(–1 49)	(–6 81)	(1 23)	(3 51)	(14)
Log income	– 003	– 140***	– 069***	– 024*	– 038***	038***
	(– 55)	(–11 23)	(–5 39)	(–1 95)	(–2 86)	(2 64)
At home	– 037***	018	047***	006	– 087***	– 014
	(–5 98)	(1 14)	(2 63)	(36)	(–5 06)	(– 78)
Kids	033***	– 096***	– 173***	052***	009	065***
	(4 75)	(–5 47)	(–8 23)	(2 98)	(49)	(3 24)
Log GPrice × log income	– 000			– 159**	014	– 001
	(– 01)			(–2 34)	(19)	(– 01)
Log GPrice × at home	– 044			057	– 021	041
	(–1 27)			(64)	(– 22)	(39)
Log GPrice × kids	– 087**			022	100	260**
	(–2 33)			(23)	(96)	(2 39)
Log heterogeneity variable	164***	419***	286***	349***	261***	326***
	(13 62)	(56 71)	(32 17)	(59 68)	(36 69)	(45 88)
N	31,286	32,178	16,274	32,178	17,725	32,178
Adjusted R^2	209	306	174	264	146	249

*$p < 10$
**$p < 05$
***$p < 01$
Notes All shares are shares of total purchase volume Coefficient estimates are reported with t-statistics in parentheses

TABLE 5
Brand, Promotion, and Tier Share Models

Variable	National Brand Regular Log Share	National Brand Promo Log Share	Private Label Log Share	Bottom-Tier National Brand Log Share	Middle-Tier National Brand Log Share	Top-Tier National Brand Log Share
lIntercept	– 313**	–1 054**	– 404**	– 269**	– 809**	– 371**
	(–67 44)	(–70 98)	(–12 08)	(–49 56)	(–97 02)	(–7 16)
Log gas price (GPrice)	– 119**	288**	– 031	– 096**	057**	017
	(–6 21)	(5 88)	(– 88)	(–8 80)	(3 48)	(54)
GDP growth	003**	– 001	– 001	000	– 001	006*
	(2 77)	(– 37)	(– 64)	(02)	(52)	(2 64)
Log distance	– 005*	062**	– 022**	013**	– 009**	– 028**
	(–2 01)	(10 16)	(–5 09)	(6 39)	(–3 04)	(–4 97)
Log relative net price	423**	356	198**	365**	– 513**	047
	(2 87)	(90)	(4 14)	(17 60)	(–13 03)	(1 34)
Log relative assortment size	– 574**	– 507*	370**	183**	– 104	2 272**
	(–6 63)	(–2 24)	(8 43)	(2 78)	(–1 14)	(22 51)
Log income	046**	– 032**	– 085**	– 028**	046**	101**
	(14 18)	(–3 85)	(–14 35)	(–10 26)	(11 42)	(13 46)
At home	– 015**	– 009	055**	004	– 005	– 001
	(–3 52)	(– 84)	(7 19)	(1 20)	(– 99)	(– 10)
Kids	000	– 071**	049**	029**	– 023**	– 062**
	(0)	(–5 95)	(5 81)	(7 35)	(–4 09)	(–5 72)
Log GPrice × log income	– 036*	197**	041			
	(–2 01)	(4 28)	(1 23)			
Log GPrice × at home	– 009	– 070	128**			
	(– 38)	(–1 15)	(2 93)			
Log GPrice × kids	026	– 096	– 073			
	(1 02)	(–1 45)	(–1 56)			
Log heterogeneity variable	424**	401**	477**	402**	265**	281**
	(53 78)	(72 86)	(54 10)	(40 01)	(41 39)	(32 79)
N	32,137	29,937	31,553	32,092	32,014	30,748
Adjusted R^2	252	176	277	206	115	148

*$p <$ 05
**$p <$ 01
Notes All shares are shares of purchase volume Coefficient estimates are reported with t-statistics in parentheses

advantage of promotions on these top brands to reduce their cost[8]

Effects of Other Variables on Shopping Behavior

GDP growth rate The overall shopping results in Table 3 show that the GDP growth coefficient is not significant for shopping frequency and is negative for expenditure and purchase volume The negative sign is surprising but may reflect a small substitution effect as consumers travel and eat out more when economic conditions are good and therefore buy less for home consumption Recall that this variable is not in log form, so the coefficient is the percentage change in the dependent variable for a unit increase in GDP growth For a one percentage point increase in GDP growth, the decreases in expenditure and purchase volume are small (9% and 5%, respectively) In elasticity terms, a 100% increase in GDP growth from its average of 1 29% (see Table 1) is associated with 1 1% and 65% decreases in expenditure and volume, respectively

In line with our expectations, the impact of this variable is substantially smaller than the impact of gas price across all the other models Indeed, there are only a few significant effects in Tables 4 and 5 As GDP growth rises, households increase their share of purchases at grocery stores and reduce shares at other formats, especially supercenters Consistent with economic theory, as GDP growth increases, households slightly increase their share of regular-priced and top-tier national brands

Control variables In general, the effects of the control variables, when significant, are intuitive We begin with the impact of distance It has a negative effect on shopping frequency and spending (Table 3) That is, households consolidate their shopping into fewer trips when they must travel farther, and they conserve spending to offset higher travel costs Table 4 confirms that the farther the relative distance to a format, the less likely a household is to visit that format (Ailawadi, Pauwels, and Steenkamp 2008, Fox, Montgomery, and Lodish 2004) Distance also induces some shopping consolidation in that the farther the drugstore or mass store format, the greater is the share of spending in those formats conditional on a visit The supercenter format suffers because of its locational disadvantage in that households that are farther away not only visit it less often but also spend less there Finally, Table 5 shows a negative effect of distance on private label share and a positive effect on promotional national brand share Consumers also reduce mid- and top-tier brand shares and increase bottom-tier brand shares when they must travel farther to shop This may be to offset driving cost, but it could also be because the retail formats that are farthest away (warehouse clubs) have a lower-than-average top-tier assortment and a higher-than-average bottom-tier assortment (Table 1)

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[8] Our key results are robust and remain substantively unchanged with a linear formulation Two differences worth noting are that, in the linear formulation, the small gas price effect on total spending becomes insignificant and the insignificant gas price effect on warehouse club visit probability becomes a small, but significant, positive effect

The effect of net price is not always negative Net price has the expected negative effect on shopping trips, purchase volume, and expenditure With a couple of exceptions, it also has the expected negative effect in the format share models, though it is not always significant This is consistent with the mixed effect of price in prior research (e g , Fox, Montgomery, and Lodish 2004) The positive effect for regular national brand and private label shares is consistent with previous findings that the price differential between private labels and national brands may be too big and that private labels can benefit from reducing the differential (Ailawadi, Pauwels, and Steenkamp 2008, Hoch and Banerji 1993)

Finally, the impact of assortment is noteworthy It is negative for shopping frequency, we presume that consumers need fewer shopping trips to find what they need when assortment is large Both spending and purchase volume increase with the variety of choices offered by a bigger assortment In addition, we find that the more the private label is emphasized in the total assortment, the more frequently households shop, and the lower is their purchase volume and spending Consistent with prior research (e g , Ailawadi, Pauwels, and Steenkamp 2008), this suggests that emphasizing private labels too much is not good for retailers

As we expected, in general the relative size of a format's assortment increases its share, with the exception being the mass store format As grocery stores and drugstores increase their emphasis on private labels, households lower their visits and share of spending there, but the opposite is true for mass stores This is consistent with different expectations and objectives in shopping trips made to different formats (Fox and Sethuraman 2006) Consumers want variety at the local grocery store and drugstores and lower-priced private labels when they visit a mass store Table 5 shows that assortment size has the expected positive effect for bottom- and top-tier national brands and for private labels, but surprisingly, it has a negative effect for regular and promoted national brand share The latter is consistent with prior findings that sales actually improve when retailers prune assortment strategically (Broniarczyk, Hoyer, and McAlister 1998)

Demographic variables The main effects of demographics on shopping behavior are largely in line with intuition Table 3 shows that income has a negative effect on the number of shopping trips and a positive effect on spending Both effects make sense because the financial constraints of low-income households encourage them to search more and therefore make more trips, according to basic economic theory, high-income households can afford to spend more Table 4 shows that high-income households make fewer visits to drugstores and mass stores and also have lower shares in these formats conditional on a visit They also visit supercenters and warehouse clubs more often and have higher warehouse club share conditional on a visit, perhaps because they can afford the budget outlay required for bulk shopping Finally, Table 5 shows that, consistent with basic economic theory, high-income households have higher shares of regular-priced national brands and middle- and top-tier national brands and lower shares of promotional and bottom-tier national brands and private labels

Households with at least one nonworking household head make slightly more trips, consistent with fewer time constraints, and their volume and spending are also slightly greater (Table 3) They spend less at grocery and mass stores and more at drugstores (Table 4) This may have less to do with their time constraints (or lack thereof) and more to do with the probability that they are older and/or retired, a prime target market for drugstores They buy fewer regular-priced national brands, but surprisingly, they buy more private labels, not more promotional national brands, despite their fewer time constraints This finding may be related to their preference for drugstores, which carry a higher percentage of private label products than supercenters and warehouse clubs (Table 1)

In general, the impact of children is intuitive Households with children make fewer shopping trips, presumably because of time constraints, but their total expenditure and purchase volume are higher because of the greater needs of large families They visit and spend less at drugstores, which is consistent with the older, female target market of drugstore chains In contrast, they spend more at grocery stores, mass stores, and supercenter formats They are time constrained, and they need to save money on their large shopping baskets, so they prefer formats that balance convenience (grocery store) with affordability (mass store and supercenter) Also in line with intuition, time-constrained households with children buy more private labels and fewer national brands on promotion

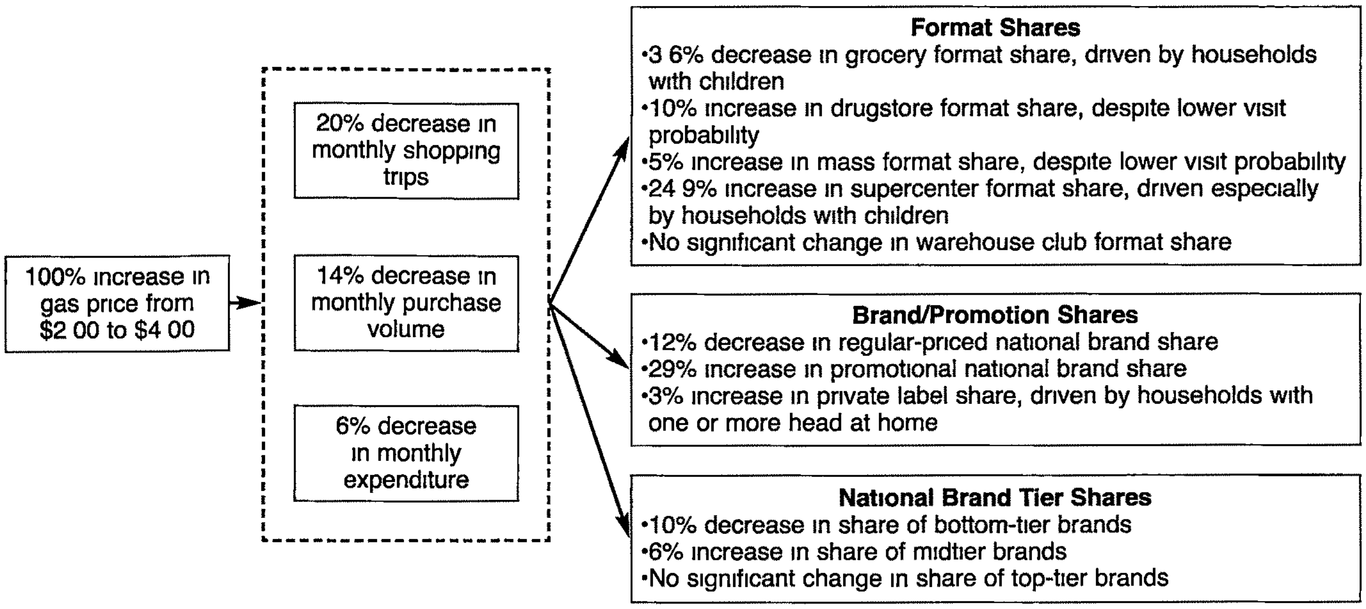
Discussion

Macroeconomic conditions have major effects on consumer behavior and, therefore, on firm performance This research provides a comprehensive, disaggregate analysis of how and how much consumers change their grocery shopping behavior in response to gas price, a macroeconomic variable that is increasing in importance In quantifying the effect of gas price, we control for general macroeconomic conditions as reflected in the GDP growth rate On the one hand, our work complements aggregate research on the impact of macro factors, and on the other hand, it builds on the large body of research on consumer grocery shopping behavior, which examines a host of variables, such as price, promotions, assortment, and competitive factors, but in general does not incorporate macroeconomic factors

Gas Price Effect

We summarize the estimated average magnitude of the gas price effect on each component of shopping behavior in Figure 3 For easy interpretation, the magnitudes are in terms of elasticities, that is, the percentage change in a com-

FIGURE 3
Summary of Average Gas Price Effect


100% increase in gas price from $2.00 to $4.00
20% decrease in monthly shopping trips
14% decrease in monthly purchase volume
6% decrease in monthly expenditure
Format Shares
•3.6% decrease in grocery format share, driven by households with children
•10% increase in drugstore format share, despite lower visit probability
•5% increase in mass format share, despite lower visit probability
•24.9% increase in supercenter format share, driven especially by households with children
•No significant change in warehouse club format share
Brand/Promotion Shares
•12% decrease in regular-priced national brand share
•29% increase in promotional national brand share
•3% increase in private label share, driven by households with one or more head at home
National Brand Tier Shares
•10% decrease in share of bottom-tier brands
•6% increase in share of midtier brands
•No significant change in share of top-tier brands

Notes: Percentage changes in shares are from the average share of each option. Therefore, in share points, the 3.6% decrease in grocery share is larger than the 24.9% increase in supercenter share, given the much larger average share of the grocery format.

ponent of shopping behavior for the average household, attributable to a 100% increase in gas price (e.g., from $2.00 per gallon to $4.00 per gallon). We summarize the effect of gas price as follows: Households consume less and consolidate their shopping as rising gas prices take a bigger bite out of their wallet, but they preserve their preference for high-quality brands, searching for them on promotion to save money. Next, we highlight the aspects of these results that are either surprising or contrary to conventional wisdom and discuss their implications.

We found that an increase in gas prices reduces shopping frequency and purchase volume, and though this may not seem surprising, it is important for at least two reasons. First, although prior research has established a strong effect of macroeconomic factors, such as recessions and lower consumer confidence, on sales of durable goods, consumer packaged goods products are considered more habitual and necessary, less conducive to purchase postponement, and, therefore, less vulnerable (Deleersnyder et al. 2004; Katona 1975). Second, evidence shows that consumers travel less and eat at home more as gas prices rise, so there is a positive substitution effect that should increase food purchases. Indeed, Gicheva, Hastings, and Villas-Boas (2010) report a positive effect of gas price on expenditure in four food categories. Despite these phenomena, we document a substantial reduction especially in overall purchase volume when we include a comprehensive array of grocery products and control for other variables. Apart from the general decrease in purchase volume, which hurts both manufacturers and retailers, manufacturers of impulse products may be especially hurt by lower shopping frequency as impulse purchase opportunities decrease. In addition, consumers will stockpile, so manufacturers and retailers should offer frequent promotions to generate shopping trips and increase the opportunities for consumers to select their offering.

In general, the impact of gas prices on where consumers shop is intuitive. They consolidate their shopping. Driven largely by households with children, supercenters, the quintessential one-stop shopping format, benefit at the expense of traditional grocery stores. Although consumers visit drugstores and mass stores less, they buy a larger share of their requirements there when they do visit, and the net impact is slightly positive. Manufacturers need to consider the shift in consumer choice as they negotiate prices and trade deals with the different formats. They may need to offer more promotional funds to the traditional formats to keep them competitive while engaging the supercenter channel with different, possibly larger-size stockkeeping units that higher-income and larger households are willing to buy.

Consistent with economic theory, higher gas prices make households shift away from regular- to promotional-priced national brands. The shift toward private labels is much smaller. Indeed, there is no significant impact on private label share except among households with one head at home. This is a surprising finding given the attention in the business press to private label growth, and its implications are important. Retailers should realize that continuing to emphasize private labels at the expense of national brands, unless it is accompanied by credible quality improvements and strong marketing and differentiation (Ailawadi, Pauwels, and Steenkamp 2008), may not increase share even in tight times. Promotions are an effective retention tool as gas prices increase, so balancing a robust private label with attractive promotions on national brands is more likely to be effective. Manufacturers should also realize that hunkering down in tough times by cutting promotions and allowing prices to rise will lead to share losses (see Deleersnyder et al 2004) Furthermore, given prior research on the asymmetry of consumer shifts (Lamey et al 2007), consumers lost during tough times may not return when financial constraints are eased

Equally important is our finding that higher gas prices do not hurt the share of top-tier brands among consumers who continue to purchase national brands Rather, it is the share of bottom-tier brands that drops, while midtier brands gain This finding is contrary to the conventional wisdom that top-tier brands suffer when times are tough but is consistent with research on context effects, private labels are much more likely to take share away from bottom-tier brands than from top-tier ones Thus, manufacturers should tread carefully in introducing lower-priced extensions of their high-equity brands Unless they can significantly cut costs and preserve margins at the substantially lower price needed to combat private labels, they may find that the lower-tier introductions are not effective in retaining customers and may end up hurting their overall brand equity It would be worthwhile to monitor the performance of "basic" versions of national brands that companies such as Procter & Gamble have begun introducing (Bryon 2009)

In summary, the most direct way consumers can offset higher gas prices is by using less gas, but the economics literature has convincingly shown that gasoline demand is fairly inelastic Our results show that travel cost plays a role in consumer shopping shifts, but it is far from the sole determinant On the one hand, shopping frequency decreases substantially as gas prices increase Distance is an important control variable in our models and shows the expected negative sign Furthermore, the one-stop shopping supercenter format increases share as gas prices rise On the other hand, supercenters are generally farther away, and consumers buy more on promotion as gas prices increase, despite the need to search at different times and in different stores In addition, sensitivity to distance does not become stronger with gas price increases, except in the shopping trip model Overall, therefore, our results underscore the importance of considering not just monetary cost but also the full spectrum of other economic costs and, to a lesser extent, the psychosocial aspects of shopping in understanding consumer shopping response to macroeconomic factors such as gas price

Limitations

We note some limitations of our work that we hope researchers can address First, we estimate the impact of gas price on each component of shopping behavior separately However, it is likely that consumers' shopping decisions are interdependent or follow a hierarchical structure (e g , they first decide on their budget and where to shop and then decide what to buy) We leave this to further research to test more integrated models

Second, although we allow for heterogeneity in the gas price effect across key demographic groups, there may be heterogeneity in response among consumers that these demographic variables do not capture For example, consumers with different psychographic and shopping profiles may react differently Generating such profiles and studying differences in their response are fruitful directions for additional research

Third, although we control for economic conditions with the well-accepted GDP growth variable and find similar results to the Conference Board Composite Index of Coincident Indicators, other macroeconomic variables may affect shopping behavior and should be examined, especially when the data span longer periods Similarly, we account for key marketing-mix variables, but other retail factors, such as service and convenience (Ailawadi and Keller 2004, Berry, Seiders, and Grewal 2002, Gauri, Trivedi, and Grewal 2008), influence consumers' format and store choice To the extent that these factors are stable, we control for them through the heterogeneity variable However, further research should examine whether the influence of these factors changes with the macroeconomic environment

Conclusion

The significant effect of gas price we document herein makes it important to incorporate this factor explicitly into consumer shopping behavior models when it exhibits substantial variance We also contrast the effects of gas price and general economic health on grocery shopping and find that the former is much stronger Although we examine the short-term impact, it is important to understand whether these changes persist over the long run and whether they reverse when gas price goes down again Furthermore, it is important to understand the extent to which shopping behavior changes are driven by psychological factors rather than the direct budgetary constraints that higher gas prices impose Gas prices and general economic conditions are likely to have very different effects on consumer sentiment and attitudes, which in turn affect consumers' psychological willingness to buy Finally, we show that gas price is just one important macroeconomic variable outside the control of managers that influences consumer shopping Other macroeconomic variables, such as home values and tax rates, might also affect consumers' willingness and/or ability to buy We hope that our work stimulates further research in this important domain

Appendix
Variable Definitions

We aggregate all variables from the category to the format and market level using household-specific category and format shares in the initialization period as weights[9] We use the first two months as the initialization period

Variables for Format Share Models

$Distance_{hj}$ Distance to retail format j for household h is calculated as

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[9] The exception is net price of a category, which we aggregate up from stockkeeping unit and brand levels using market shares in the initialization period as weights

$$\sum_{n=1}^{N} \text{dist}_{hjn} ts_{hjnt0},$$

where dist_{hjn} is the distance from the closest store of retailer n in format j to household h and ts_{hjnt0} is the share of retailer n in retail format j for household h in the initialization period

$\mathit{RelDist}_{hj}$ Distance to format j for household h relative to weighted average distance to all formats is calculated as

$$\frac{\text{Distance}_{hj}}{\sum_{j=1}^{5} \text{Distance}_{hj} ts_{hjt0}},$$

where ts_{hjt0} is household h's share of format j in the initialization period

NPrice_{hjt} Net price is calculated as

$$\sum_{c=1}^{C} \frac{\text{NPrice}_{jtc}}{\text{NPrice}_{t0c}} cs_{ht0c},$$

where Nprice_{jtc} is net price of category c in format j in month t and cs_{ht0c} is share of total spending by household h in the initialization period on category c

$\mathit{RelNPrice}_{hjt}$ Net price of format j in month t for household h, relative to weighted average net price of all formats, is calculated as

$$\frac{\text{NPrice}_{hjt}}{\sum_{j=1}^{5} \text{NPrice}_{hjt} ts_{hjt0}}$$

$\mathit{AssrtSize}_{hjt}$ Assortment size of format j for household h in month t is calculated as

$$\sum_{c=1}^{C} \text{AssrtSize}_{jtc} cs_{ht0c},$$

where AssrtSize_{jtc} is the number of distinct stockkeeping units of category c in the quarter of month t in retail format j

$\mathit{RelAssrtSize}_{hjt}$ Assortment size of format j for household h relative to weighted average assortment size of all formats is calculated as

$$\frac{\text{AssrtSize}_{hjt}}{\sum_{j=1}^{5} \text{AssrtSize}_{hjt} ts_{hjt0}}$$

PctPL_{hjt} Percentage private label in assortment of format j for household h in quarter of month t is calculated as

$$\sum_{c=1}^{C} \text{PLPct}_{jtc} cs_{ht0c},$$

where PLPct_{jtc} is the percentage of the total assortment that is private label in category c of format j in the uarter of month t

$\mathit{RelPctPL}_{hjt}$ Percentage private label in assortment size of format j for household h relative to weighted average percentage private label in all formats is calculated as

$$\frac{\text{PLPct}_{hjt}}{\sum_{j=1}^{5} \text{PLPct}_{hjt} ts_{hjt0}}$$

Variables for Brand/Promotion Share Models

$\mathit{Distance}_{h}$ Average distance to stores for household h is calculated as

$$\sum_{n=1}^{N} \text{Distance}_{hj} fs_{hjt0},$$

where Distance_{hj} is as defined previously and fs_{hjt0} is the share of total trips to retail format j by household h in the initialization period

NPrice_{hkt} Net price is calculated as

$$\sum_{c=1}^{C} \frac{\text{NPrice}_{kct}}{\text{NPrice}_{ct0}} cs_{ht0c},$$

where NPrice_{kct} is net price of brand type k in category c in month t and cs_{ht0c} is as defined previously Note that k = 1 is national brands and k = 2 is private label

$\mathit{RelNPrice}_{hkt}$ Relative net price is calculated as

$$\frac{\text{NPrice}_{hkt}}{\sum_{k=1}^{2} \text{NPrice}_{hkt} ts_{hkt0}},$$

where ts_{hkt0} is household h's share of brand type k in the initialization period

$\mathit{AssrtSize}_{hkt}$ Assortment size of brand type k for household h in month t is calculated as

$$\sum_{c=1}^{C} \text{AssrtSize}_{ktc} cs_{ht0c},$$

where AssrtSize_{ktc} is the number of distinct stockkeeping units of brand type k in category c in the quarter of month t

$\mathit{RelAssrtSize}_{hkt}$ Assortment size of brand type k for household h relative to weighted average assortment size of both brand types is calculated as

$$\frac{\text{AssrtSize}_{hkt}}{\sum_{k=1}^{2} \text{AssrtSize}_{hkt} ts_{hkt0}}$$

Variables for National Brand Tier Share Models

These are calculated the same as previously, except that k = 1, 2, and 3, respectively, for bottom-, mid-, and top-tier national brands

Variables for Overall Shopping Models

Distance$_h$ This is calculated as defined previously

NPrice$_{ht}$, *AssrtSize*$_{ht}$, *and PctPL*$_{ht}$ These are calculated as follows

$$\sum_{j=1}^{5} \text{NPrice}_{hjt}\text{ts}_{hjt0},$$

$$\sum_{j=1}^{5} \text{AssrtSize}_{hjt}\text{ts}_{hjt0}, \text{ and}$$

$$\sum_{j=1}^{5} \text{PctPL}_{hjt}\text{ts}_{hjt0},$$

where NPrice_{hjt}, AssrtSize_{hjt}, PctPL_{hjt}, and ts_{hjt0} are as defined in the format share models

Purchase Volume$_{ht}$ Total purchase volume by household h in month t is calculated as

$$\sum_{c=1}^{C} q_{htc}\text{NPrice}_{t0c},$$

where q_{htc} is total equivalent units of category c purchased by household h in month t and NPrice_{t0c} is net price of category c in the initialization period

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Amber M. Epp & Linda L. Price

Designing Solutions Around Customer Network Identity Goals

When companies fail to account for collective and relational goals in customer solutions, a mismatch can occur between firms' solutions and those that customers envision Understanding the integration processes of customer networks is essential to improving solution design This investigation draws on depth interviews with 21 families, the focal customer network, to generate collective and relational vacation narratives that contextualize their accounts The authors identify four customer network integration processes offerings assembled around prioritized goals, alternate participation, concurrent participation, and offerings assembled around separate coalitions The findings reveal that the resulting mix of integrated products and services, or the solution, is shaped by customer network identity goals, goal management approaches, and constraints The authors conclude with recommendations for how firms can use this information to improve solution design, identify new network partners, and revise value propositions

Keywords customer networks, family decision making, value cocreation, identity goals, solutions

> The Samson family took a vacation to Disney World with goals of reasserting their family identity, securing idealized family memories, and having a final family holiday before the oldest daughter went off to college However, Disney World offered so many activities tailored to the individual, such as "princess autographs" for the youngest daughter and "big rides" for the older kids, that the family actually spent very little time together, despite their intentions Instead, the Samsons were thwarted by how the activities in Disney's offering were structured To compensate for these shortcomings, the family integrated Disney World's activities with those of numerous other firms' products and services (e g , Universal Studios, private condominium, parasailing service, and a public beach) that were more responsive to collective goals (vignette compiled from interview data)

Companies are increasingly recognizing the need to focus not on individual products or services but rather on solutions—"offerings that integrate goods and services to provide customized outcomes for specific customers" (Sawhney 2006, p 365, see also Tuli, Kohli, and Bharadwaj 2007) To design product and service offerings as solutions, marketers need to map the entire customer experience to uncover what the customer is trying to accomplish (Christensen, Cook, and Hall 2005, Sawhney 2006, Tuli, Kohli, and Bharadwaj 2007) Companies such as Kodak, Intuit, and Procter & Gamble have developed compelling solutions by segmenting around the job to be done rather than the customer (Christensen, Cook, and Hall 2005) For example, by "tracing the full stories of how real customers buy, use, and consume products," Kodak has shifted from offering a digital camera to offering solutions that expand to image editing software, online albums, and framing services to satisfy customers' goals, such as modifying, storing, and reliving memories (Sawhney 2006, pp 372–73) Despite the promise of this approach, however, when examining the practitioner and academic literature, we find that solutions in the business-to-consumer market have been oriented around individual goals and not the "intentional acting by a collectivity" (Bagozzi 2000) We empirically demonstrate that solutions must account not only for individual goals but also for relational and collective goals

Companies struggle with and often fail to design solutions that match those that customers desire (Hagiu and Yoffie 2009, Tuli, Kohli, and Bharadwaj 2007) Explicitly, firms must decide which products and services to integrate into a solution and when and how to partner with other firms to provide them (Lusch, Vargo, and Wessels 2008, Sawhney 2006) The term "integration" refers to the processes of bringing together potentially diverse products and services in ways that create value Integration processes describe how networks arrange and interact with these assortments to serve multiple goals over the course of an experience When firm solutions fall short of expectations, customers may integrate their own solutions by combining offerings from multiple firms, as the opening vignette illustrates Previous research has shown that firm- and customer-designed solutions likely differ (Tuli, Kohli, and Bharadwaj 2007)

The purpose of the current research is to empirically explicate, from the customer network's point of view, the integration processes used to design solutions We define a "customer network" as a social structure made up of indi-

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ISSN 0022-2429 (print), 1547-7185 (electronic)

viduals who are connected by one or more specific types of formal and informal ties linked to purchase and consumption activities (Achrol and Kotler 1999) Examples of customer networks include families, organizations, brand communities, and subcultures Because families represent a tightly linked customer network, with prominent relational and collective goals connected to a broad array of purchase and consumption activities, they offer an appropriate focus for our study

Our findings uncover three reasons firms' solutions fail First, companies tend to focus too narrowly on individual customer goals and miss the relational and collective goals of customer networks We develop a typology of network goals at three levels (collective, relational, and individual) that motivate network choices We further demonstrate that when firms segment on individual goals, they include a different structure and array of products and services in their solutions than they would integrate if they also considered the network's collective goals Second, companies fail to recognize how the dynamics within the network, including synergy and discord among network goals, shape solution design That is, the degree of overlap observed among individual, relational, and collective goals drives the number, heterogeneity, and flexibility of offerings integrated into solutions Third, firms undervalue the notion that company and customer networks integrate solutions in fundamentally different ways (Tuli, Kohli, and Bharadwaj 2007, Wind 2008) In particular, customers may view solutions from a more relational perspective that moves *across* supplier firms and incorporates a different mix of products and services than a single firm offers Paying attention to how customers design solutions can uncover nonintuitive partnerships for firms or help them adjust their mix of offerings to improve network satisfaction

Our investigation is distinct in explicitly adopting a customer network approach to understanding solutions That is, we examine how customer networks manage the interplay among individual, relational, and collective identity (Epp and Price 2008) around three research questions (1) What are the identity goals of the focal customer network? (2) How do customer networks manage multiple identity goals (individual, relational, or collective)? and (3) How do the goal character, goal structure, and synergy/discord among these identity goals shape customer networks' integration processes? Coconstructed among members, identity encompasses the qualities and attributes that distinguish them from others (Epp and Price 2008) We define identity goals broadly as "conscious or unconscious pursuits" related to how people define themselves (Coulter and Zaltman 2000, p 264) Although other types of goals, such as economic, experiential, and hedonic goals, are likely relevant, we narrow the focus of our investigation to identity goals to make the undertaking and framework development feasible This narrowed scope is appropriate given (1) the nature of our data, as narratives are likely to reveal identity goals in particular (Escalas and Bettman 2000), and (2) prior research that suggests that identity goals are higher-order, central drivers of consumption (Coulter and Zaltman 2000)

In the following section, we review and critique the theoretical groundings that led to our research questions Next, we provide an overview of our method for understanding the interplay among collective, relational, and individual goals Then, we introduce a theoretical framework that organizes our findings and propose a set of research propositions Finally, we discuss the theoretical contributions, elaborate on how our findings could change solution design for managers, and offer applications of our framework in other contexts

A Shift to Integrated Solutions

Emergent research highlights the value of firms generating solutions that address a range of customers' goals (Christensen, Cook, and Hall 2005, Hagiu and Yoffie 2009, Sawhney 2006, Tuli, Kohli, and Bharadwaj 2007) Much of this research occurs in business-to-business settings, in which firms take on the primary function of integrating (Chandler and Vargo 2009, Sridhar 2009) However, scholars acknowledge that both firms and customers act as integrators (Ghosh, Dutta, and Stremersch 2006, Lusch and Vargo 2006) and have called for studies on "the interrelated themes of firm–consumer resource integration" (Kohli 2006, p 290) Given the acknowledged departure between how firms and customers envision solutions (Tuli, Kohli, and Bharadwaj 2007), further research that uncovers integration processes from a customer network's point of view is needed Again, integration processes capture how networks arrange and interact with assortments during a bounded experience For example, when remodeling a home, customers might enlist labor, how-to workshops, building materials, paint, installation, and furnishings from various stores Understanding these processes is important because integration is heralded as central to value creation and provides a key source of competitive advantage (Lusch, Vargo, and O'Brien 2007, Lusch, Vargo, and Wessels 2008) We address this gap by demonstrating that customer networks use distinct integration processes that produce different solutions than those offered by firms

There is substantial evidence that firms working in a business-to-consumer context also design solutions Anecdotal examples suggest that the innovative and profit potential of segmenting around consumers' goals rather than around predefined customer segments has not escaped managers' attention (Christensen, Cook, and Hall 2005, Sawhney 2006) Additional support comes from the proliferation of tools to manage the total customer experience Firms are differentiating themselves from the competition by offering complete solutions that stem from a deep "understanding of the customer's journey—from the expectations they have before the experience occurs to the assessments they are likely to make when it's over" and everything in between (Berry, Carbone, and Haeckel 2002, p 85, see also Schmitt 2003) However, it is clear from analyzing these accounts that current solutions are focused on *individual* consumers' pursuits and experiences Even in a relational setting, such as "capturing memories" for Kodak, in which relational and collective goals would likely surface, tools focus on mapping an individual customer's experience of modifying, storing, and reliving photos (see Sawhney 2006)

We speculate that one of the reasons for this individual customer focus in solutions is that conventional treatments of choice and decision making, even in group settings such as families, focus most often on individuals. Studies of family decision making in particular disregard collective identity tensions and, instead, emphasize how individuals attempt to influence other family members (e.g., Belch, Belch, and Ceresino 1985; Corfman and Lehmann 1987, Cotte and Wood 2004, Filiatrault and Ritchie 1980, Palan and Wilkes 1997, Su, Fern, and Ye 2003), take on different roles during the group decision (e.g., Belch, Belch, and Ceresino 1985, Davis 1970, Davis and Rigaux 1974), predict spousal and revise individual preferences (e.g., Aribarg, Arora, and Bodur 2002, Davis, Hoch, and Ragsdale 1986), or change individual purchases when considering other family members (Aaker and Lee 2001, Hamilton and Biehal 2005). In turn, solutions derived for end consumers tend to direct attention to what individuals within networks are trying to accomplish, masking goals that exist at the relational and collective level.

The shift to thinking about networks may help us reframe conventional wisdom about family decision making. In particular, recent work suggests that family decision-making research could benefit from considering how relational and collective goals shape choice (Bagozzi 2000, Epp and Price 2008, Fischer, Otnes, and Tuncay 2007). To date, these collective and relational goals have received little empirical attention (Epp and Price 2008). Although Fischer, Otnes, and Tuncay (2007) do not explicitly address this in their study, relational discourses of infertile couples reveal that shared goals of creating family led them to enlist assisted reproductive technologies and other medical remedies. This suggests that if, instead of mapping individual pursuits to design solutions, companies mapped collective consumption experiences, we would observe how choices are linked to relational and collective goals. The series of choices made within the span of a collective consumption experience represent the products and services customer networks integrate into a solution to support multiple goals. That is, family choices collect into a solution from the customer network's point of view that may differ from a firm's solution.

Consumers choose marketplace offerings that help them manage multiple and varied identity goals (Arnould and Thompson 2005, Epp and Price 2008, Huffman, Ratneshwar, and Mick 2000). Thus, we conceptualize integration processes as goal directed. Many researchers recognize that when consumers have multiple salient goals that conflict, they adjust their choices in ways that help them resolve this tension (Laran and Janiszewski 2009, Ratneshwar, Pechmann, and Shocker 1996). Despite this, calls remain for understanding how consumers trade off goals at multiple levels (Huffman, Ratneshwar, and Mick 2000), and few studies offer insight into how these trade-offs affect decision making. In particular, customer networks manage overlapping and competing identity goals that emerge among individuals, relational units, and the collective (Epp and Price 2010). Understanding the interplay of network identity goals clarifies how families make choices about which products and services to integrate, as some offerings are pulled into the solution when identity goals collide while others are not incorporated.

In constructing solutions, customer networks inevitably meet with constraints. These tangible and intangible barriers to integrating specific products or services may be physical, cultural, or attitudinal in nature (Constantin and Lusch 1994, Lusch, Vargo, and Wessels 2008). In addition, constraints arise both in the form of barriers, such as stock-outs or unavailable services and in the form of potentially positive trade-offs networks might make in response to limited resources (e.g., time, money, knowledge). For example, collective and relational goals compete for the scarce resource of vacation time, such as in the Samson family previously described. We should not disregard the role of constraints, given their likely importance in shaping integration processes. Customer networks always act as the integrator of last recourse because they shuffle new offerings to stand in for those that are unavailable from the firm's solution. Therefore, constraints may offer collaborative opportunities for improving value propositions (Lusch, Vargo, and O'Brien 2007).

Method

As previously mentioned, we chose families as our focal customer network because they are of substantial importance to solutions providers, comprise dense ties, and are of a tractable size for in-depth inquiry. We adopt a broad definition of family: "networks of people who share their lives over long periods of time bound by ties of marriage, blood, or commitment, legal or otherwise, who consider themselves as family and who share a significant history and anticipated future of functioning in a family relationship" (Galvin, Bylund, and Brommel 2004, p. 6). This definition acknowledges the diversity of membership assortments that constitute families. Rather than relying on researcher-imposed definitions of family, participants in the study identified who they consider family.

We selected family vacations as a context. Consider the vast potential for integration on a family's vacation: transportation (e.g., airlines, taxis), accommodations (e.g., hotels, campgrounds), activities (e.g., public recreation, amusement parks), provisions (e.g., restaurants, snacks), and memorabilia (e.g., souvenirs, photos). In addition, this setting emphasizes that families have potentially divergent and overlapping network identity goals. Vacations provide a collective experience that helps families develop a sense of identity (DeVault 2000), enact or produce family relationships, and find much needed time to bond (Gardyn 2001). However, disagreements about where to go and what to do frequently arise as family member interests and goals deviate. Given this, family vacations also present opportunities to examine the benefits and drawbacks of solutions, service providers, such as resort hotels and theme parks, often adopt something-for-everyone approaches in response to the potentially divergent interests of family members. Among others, examples of solution providers from our study include Disney, Marriott Resorts, Universal Studios, and Fillenwarth Beach.

Given that the literature on integration processes is in its infancy, we adopted a discovery-oriented, grounded theory approach, and our analysis followed the procedures outlined for this method (Glaser and Strauss 1967, Strauss and Corbin 1990) We employed two phases of data collection eliciting collective narratives and follow-up questions with the family, subgroups, and individual family members about their experiences We alternated the chosen subgroups across families to ensure representation of couples, siblings, parent–child, and other relational units Our purpose was to generate group and relational narratives to gain an emic understanding of the complexity of integration processes from multiple perspectives and to explore the lived experiences of informants (Thompson, Locander, and Pollio 1989) Families collectively make sense of important consumption events through narratives (Bruner 2004) In addition to helping people understand the past, stories have prospective, performative, and constructive functions, "a past event is relived in relation to present concerns and projected toward an envisioned future" (Thompson 1997, p 442) Narrative content can reveal higher-order identity goals (Escalas and Bettman 2000), so family stories provided rich textual data to this end A key missing link to understanding networks is analysis of the stories that characterize them Networks cannot be understood except as embedded in domains, and those can only be identified through the stories and discourses that uncover who belongs, their roles, and their identities (Knox, Savage, and Harvey 2006) Because open-ended questions are likely to elicit narratives with contextual detail (Riessman 1993), interviews offered an appropriate method

We interviewed 21 families (88 members) that represented a diversity of family forms and vacation types We continued interviewing until theoretical saturation occurred (Glaser and Strauss 1967) Table 1 offers additional details about families, and pseudonyms protect families' anonymity Interviews took place in participants' homes to facilitate autodriving, a form of photo elicitation, by showing vacation photos, recordings, and other memorabilia of family vacations to the families and asking them to give accounts or discuss the contents (Heisley and Levy 1991) The interview duration ranged from 50 to 155 minutes, with the average interview lasting 92 minutes In addition, to allow for detailed analysis and to capture the nonverbal interaction among family members, we video- and audiotaped the interviews

Organizing Framework

We briefly introduce Figure 1 as an organizing framework for our findings Figure 1 depicts integration processes from the customer network's perspective Our focal customer network (families) for the study is featured at the top of the framework, and we emphasize the interplay among collective, relational, and individual identity goals We also consider three constructs directly relevant to this interplay goal character, goal structure, and synergy/discord among network goals Character is linked to the family's practices and reflects shared activities, traits, and values, structure describes the level at which a goal occurs (collective, relational, or individual), and synergy/discord considers the degree to which network goals overlap and depart (Epp and Price 2008) According to Figure 1, the degree of synergy/discord among families' identity goals determines which goal management approaches they adopt In turn, these shape families' integration processes The resultant solutions vary in the number and heterogeneity of the mix of offerings and in the structural flexibility (policies, access) necessary We summarize the implications for solution design in an adjoining box In the next section, we elaborate on the specific relationships outlined in our organizing framework

Findings

We unfold the findings using a series of illustrative family cases These cases represent the patterns emergent in the broader data set but allow us to give background information and context for each family to best demonstrate how the components of our framework work together (Mead 1953) The complete data set provides a general understanding, and the cases offer more nuanced details of the integration processes involved Throughout the findings, we specify how the cases link to the broader data set and offer negative cases that help us understand the intricacies of the framework

We selected four families as illustrative cases on the basis of their place on a continuum of goal synergy and discord (see Figure 2) To assess the degree of synergy/discord, we considered both the character and the structure components of a network's goals For example, families' goals could synergistically overlap with regard to both structure and character if goals generally occurred at the same level (e g , collective) and involved the same practices (e g , camping) Conversely, families' goals could be highly discordant with regard to both structure and character if goals generally occurred at different levels (e g , collective, relational, and individual) and involved diverse practices (e g , camping, shopping, and visiting museums) In addition, families' goals might reveal a mix, with overlapping goal structure (e g , all collective goals) but discordant character elements (e g , camping, shopping, and visiting museums) or with overlapping character elements (e g , all focused on camping) but discordant goal structure (e g , mix of collective, relational, and individual goals)

Focal Customer Network: Identity Goals

Because the primary contribution of this study is to examine customer networks' integration processes and their implications for solution design, we briefly outline the goal-related components of Figure 1 here and then offer more details within the context of each section to highlight how different approaches to goal management play out in integration processes We also demonstrate how firm solutions fall short in meeting customer networks' goals, prompting families to integrate outside offerings

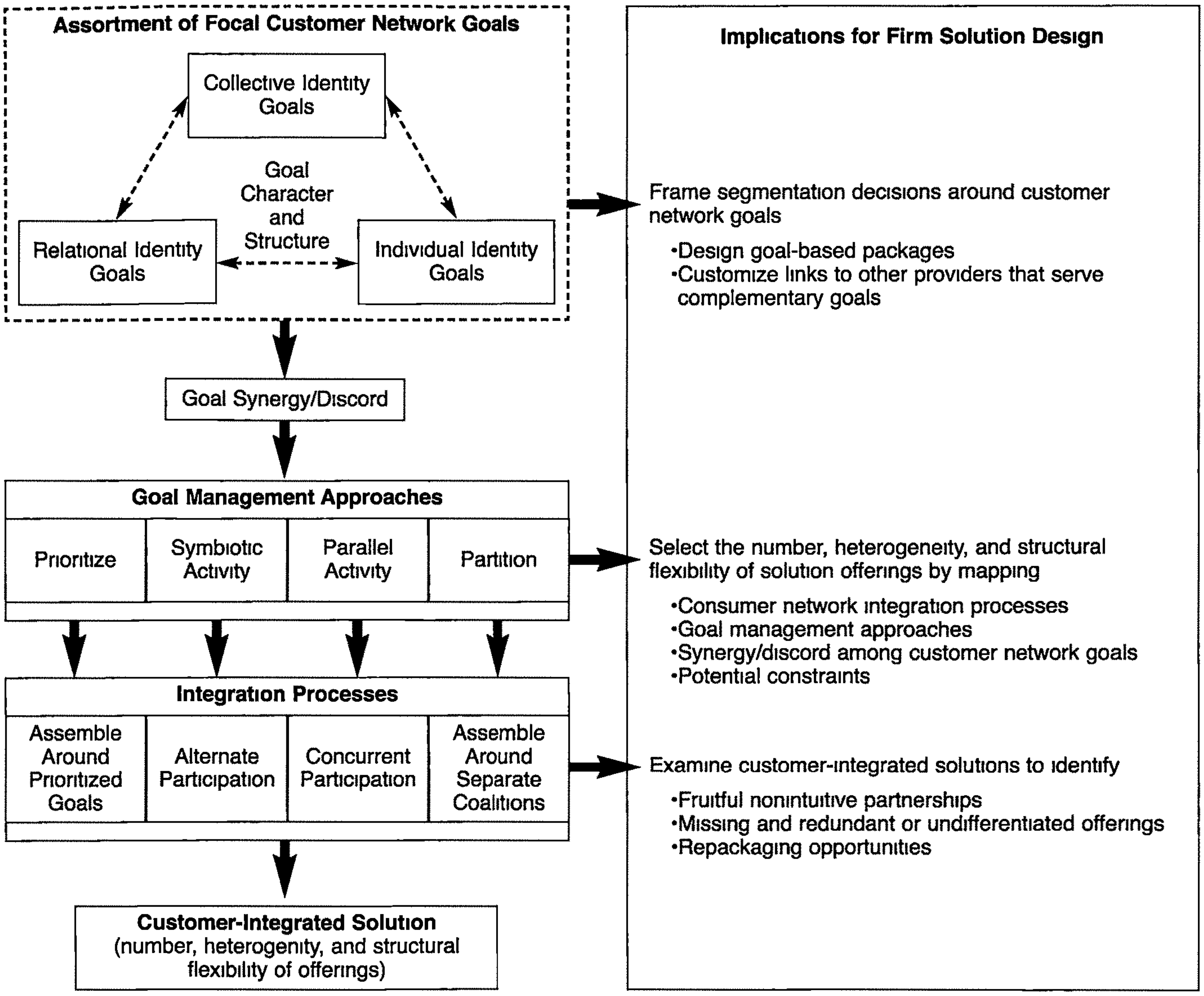
Each of the families revealed multiple identity goals For many families, vacations represented a time to reassert a family identity that is not easy to enact in everyday life (e g , camping) but at the same time allowed families to try

TABLE 1
Participants

#	Family Name	Family Form	Family Members (Relationship, Age, Occupation)	Destination
1	Mason	Traditional	Peter* (father, 41, certified public accountant), Cathy* (mother, 41, bank compliance), Bob* (son, 8), Addison* (daughter, 11)	Black Hills, S Dak
2	Kramer	Traditional	Jake* (father, 44, director of services), Kelly* (mother, 39, billing specialist), Brady* (son, 10)	San Diego
3	Dodge	Traditional	Matt* (father, 51, statistical analyst), Mary* (mother, 53, director of human services), Madeline* (daughter, 13)	China, family cabin
4	Locke	Traditional	Glen* (father, 51, stay-at-home dad), Callie* (mother, 49, certified public accountant), Beau* (son, 14)	Western Nebraska/ South Dakota
5	Murray	Traditional	Patrick* (father, 40, contractor), Fran* (mother, 43, office coordinator), Michael* (son, 10), Jaylin* (daughter, 8)	Colorado
6	Hardy-Harrison	Blended	Dan* (father, 37, financial planner), Kendra* (mother, 41, anesthesiologist), Delilah* (daughter—mom's, 8), Dana* (daughter—mom's, 5), Mandy* (daughter—dad's, 5)	Colorado (skiing)
7	Taylor	Traditional, twins	Jared* (father, 41, magnetic resonance imaging technician), Cara* (mother, 42, dental hygienist), Hayden* (son, 9½), Maggie* (daughter, 9½)	Lake Okoboji, Iowa
8	Wilson	Traditional	Derrick* (father, 43, architect), Kayla* (mother, 43, administrative assistant), Cassie* (daughter, 13), Valerie* (daughter, 11)	African safari
9	Carter	Single-parent, adoptive (all), multiracial	Lacey* (mother, 47, day care provider), Abbie* (daughter, 19, part time), Jackson (son, 17), Sallie* (daughter, 14), Madison* (daughter, 13), Ajay* (son, 12), Delsin* (son, 8, American Indian), Gillian* (daughter, 3)	St Louis
10	Horton	Blended	Shane* (father, 42, talk radio host), Meredith* (mother, 40, stay-at-home mom), Holly* (daughter—mom's, 8), Avery* (son—mom's, 11), Hilary* (daughter—both, 4), Lexi (mom's niece, 22)	Disneyland
11	Haws	Single-parent	Sadie* (Mother, 33, director of marketing), Elise* (Daughter, 7), Kali* (Daughter, 5), Grandparents	Disney World
12	Dawson	Single-parent	Candice* (mother, 38, administration), Cameron* (son, 13), Abby (daughter—lives with dad, 16)	Godstock (Nebraska)
13	Diggerty	Adoptive, multiracial	Todd* (father, 42, deputy), Tandy* (mother, 42, office manager), Daren (son, 21, U S Navy), David* (son, 17), Katie* (daughter, 15), Paxton* (son—adopted, 9, Black), Deacon* (son—adopted, 8, Black)	Chicago
14	Halpert	Traditional	Jason* (father, 41, internal auditor), Tonia* (mother, 42, homemaker), Jeremy* (son, 11), Kenton* (son, 9), Libby* (daughter, 7)	Boston/New York
15	Metcalf	Adoptive, multiracial	Ronda* (mother, 46, registered nurse), Mike* (father, 51, teacher), Maddy* (daughter—adopted, 5½, Asian), Sephora* (daughter—adopted, 4, Asian)	Bei Dai He (China)
16	Samson	Traditional	Scott* (father, 50, self-employed), Tara* (mother, 47, dental hygienist), Sabrina* (daughter, 19), Beth* (daughter, 17), Kira* (daughter, 12), Jocelyn* (daughter, 8)	Disney World/ beach
17	Higgins	Blended	James* (father, 49, programmer), Malina* (mother, 46, graphic designer), Philip* (son—dad's, 14), Chad* (son—mom's, 12), Keith (son—mom's, 15), Aimee (daughter—dad's, 11), Nash (son—mom's, 26)	Park City, Utah/ Yellowstone
18	Tanner	Single-parent	Leslie* (mother, 33, veterinary technical assistant), Clay* (son, 10), Dylan* (son, 7)	Disneyland
19	Navarro	Traditional, Hispanic	Nardo* (father, 50, phlebotomist), Rita* (mother, 35, customer service), Genoveva* (daughter, 12), Serena* (daughter, 9), Adriano* (son, 7), Alameda (grandmother)	Worlds of Fun (Kansas City, Mo)/El Salvador
20	Quigley	Blended	Curtis* (father, 48, truck driver), Dina* (mother, 44, personal banker), Bryson* (son—both, 14), Karston* (son—both, 11), Craig (son—mom's, 24), Evan (son—mom's, 20), Juliet (daughter—dad's, 26), Jonah (son—dad's, 20)	Colorado
21	Warren	Blended, multiracial	Gary* (father, 30, Chilean, mortgage broker), Christi* (mother, 28, management trainer), Katie* (daughter—dad's, 6)	Denver

*Indicates family members who participated in the interviews

FIGURE 1
Integration Processes in a Customer Network


Assortment of Focal Customer Network Goals
Collective Identity Goals
Goal Character and Structure
Relational Identity Goals
Individual Identity Goals
Goal Synergy/Discord
Goal Management Approaches
Prioritize
Symbiotic Activity
Parallel Activity
Partition
Integration Processes
Assemble Around Prioritized Goals
Alternate Participation
Concurrent Participation
Assemble Around Separate Coalitions
Customer-Integrated Solution (number, heterogenity, and structural flexibility of offerings)
Implications for Firm Solution Design
Frame segmentation decisions around customer network goals
•Design goal-based packages
•Customize links to other providers that serve complementary goals
Select the number, heterogeneity, and structural flexibility of solution offerings by mapping
•Consumer network integration processes
•Goal management approaches
•Synergy/discord among customer network goals
•Potential constraints
Examine customer-integrated solutions to identify
•Fruitful nonintuitive partnerships
•Missing and redundant or undifferentiated offerings
•Repackaging opportunities

out new identities (e g , being adventurous) Blended, divorced, and adoptive families in our study often used their vacations to build collective identities ("It's really made us a family" [Higgins family, mother]) but also to preserve relational identities within the family ("We have our time [as a couple]" [Higgins family, mother]) Table 2 summarizes the types of identity goals that emerged For each type, families offered examples related to both structure and character

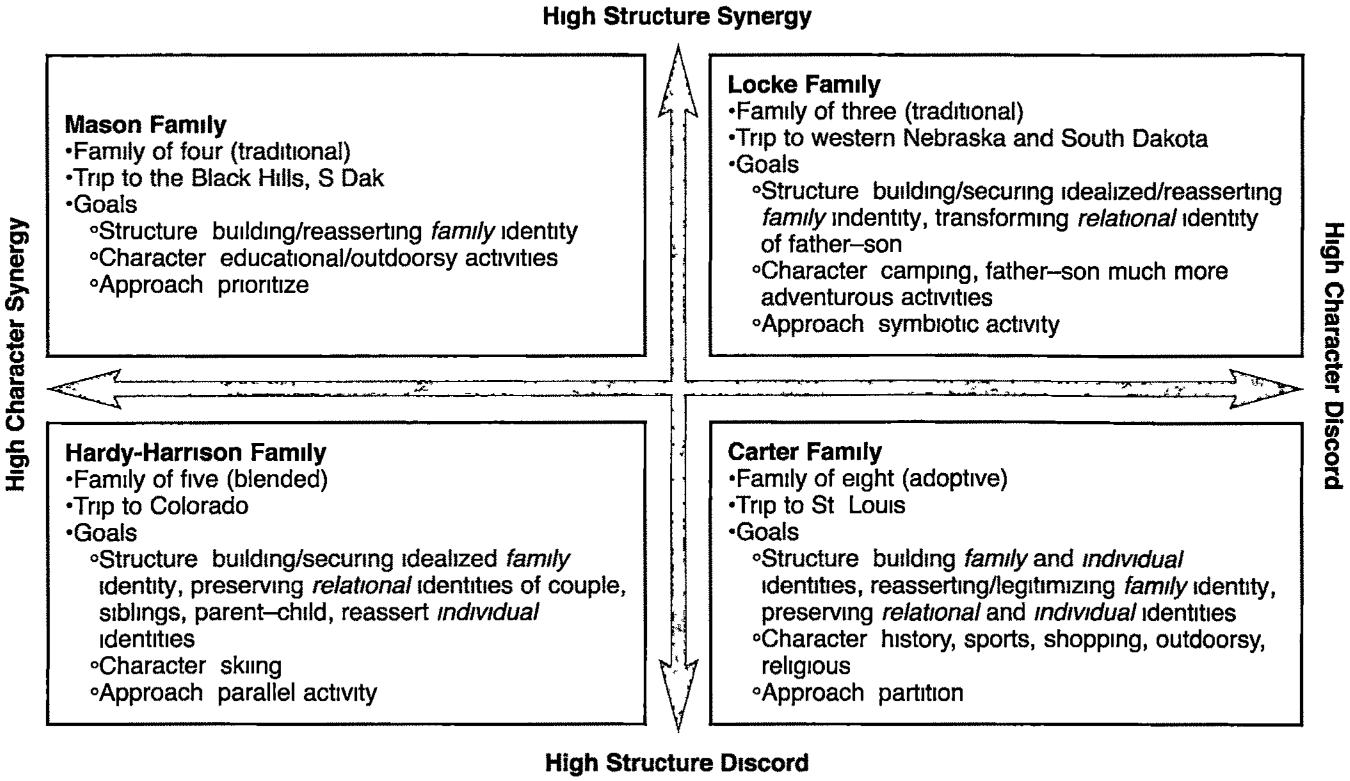
To illustrate, consider the Hardy-Harrisons, a recently formed, blended family that took their first vacation together to accomplish a family goal of building a new collective identity Dan, a financial planner, brings one daughter to the marriage (Mandy, 5), and Kendra, an anesthesiologist, brings two daughters to the marriage (Delilah, 8, and Dana, 5)

> "That [vacation] was the first time we actually did something as a group where it was just us And you know, have the two families merge It was good to get them all together, and get them, kind of, in that mind frame" (Hardy-Harrison, father)

This building goal led the family to enlist offerings that allowed them to spend time as a group ("Ski Cooper," "Target," and "condo") In addition to this collective building goal, the Hardy-Harrisons also had a goal of securing an idealized family identity, they envisioned being a skiing family To achieve this goal, Dan and Kendra enrolled all three of their daughters in Ski Cooper's Panda Patrol ski school As Dan said, "[The vacation] was geared more toward getting the kids involved in skiing 'cause we wanted them to learn how to ski"

This skiing theme emerged repeatedly during the Hardy-Harrison vacation narrative, indicating that the practice of skiing is central to how the family characterizes itself Thus, we observe skiing as central, not only to collective goals but also to the many relational goals the family

FIGURE 2
Illustrative Cases



Mason Family
- Family of four (traditional)
- Trip to the Black Hills, S Dak
- Goals
  - Structure building/reasserting *family* identity
  - Character educational/outdoorsy activities
  - Approach prioritize

Locke Family
- Family of three (traditional)
- Trip to western Nebraska and South Dakota
- Goals
  - Structure building/securing idealized/reasserting *family* indentity, transforming *relational* identity of father–son
  - Character camping, father–son much more adventurous activities
  - Approach symbiotic activity

Hardy-Harrison Family
- Family of five (blended)
- Trip to Colorado
- Goals
  - Structure building/securing idealized *family* identity, preserving *relational* identities of couple, siblings, parent–child, reassert *individual* identities
  - Character skiing
  - Approach parallel activity

Carter Family
- Family of eight (adoptive)
- Trip to St Louis
- Goals
  - Structure building *family* and *individual* identities, reasserting/legitimizing *family* identity, preserving *relational* and *individual* identities
  - Character history, sports, shopping, outdoorsy, religious
  - Approach partition

articulated As was common with blended families, the Hardy-Harrisons were attempting to build a new family while preserving the identities of relational units within the family, including the couple, siblings, and parent–child identities The following dialogue illustrates how skiing supported each of these relational groupings

> "I had taken my kids, my two, to Oregon over Christmas, and we'd gone skiing one day up there And then we went Thanksgiving, the day after Thanksgiving with her [points to husband's daughter, Mandy] " (Hardy-Harrison, mother) "We went [skiing] twice before, didn't we? Just you and I?" (father) "Yeah " (mother)

Finally, Ski Cooper enabled Kendra to achieve her individual goal of reasserting her "active, adventurous" identity

> "I worked an extra job when I was in high school so I could go buy skis I was committed to this ski thing [so] then I worked up on the mountain for two years teaching skiing I could ski whenever I wanted " (Hardy-Harrison, mother)

Although skiing had been important to her identity throughout her life, it was not a practice she could engage in during her everyday life

Central to understanding how the Hardy-Harrison family managed multiple goals is the extent to which these goals are synergistic with versus discordant from one another We observe high character synergy because each goal is focused on the practice of skiing However, with regard to structure, we observe high discord Although the building and securing idealized goals are at the same level (collective), the preserving (relational) and reasserting (individual) goals occur at different levels As a result, the vacation focuses on skiing, but the family carves out time to spend as a family, time to be in smaller groupings, such as when the siblings go to ski school together while the couple skies, and time for Kendra to ski more difficult trails alone

We uncover four approaches families used to manage multiple identity goals prioritizing, symbiotic activity, parallel activity, and partitioning Table 3 offers definitions and examples from our data for each approach Furthermore, we examine each approach in the following sections to link these more contextually to the integration processes we outline next

Illustrative Case Studies: Integration Processes

Directed by efforts to manage overlapping and distinct network identity goals, families engaged in four integration processes (1) assembling offerings around prioritized goals, (2) engaging in alternate participation, (3) engaging in concurrent participation, and (4) assembling offerings around separate coalitions These are not meant to be mutually exclusive Instead, families may engage in multiple integration processes during a vacation experience As we unveil in the following section, integration processes were linked to the families' approach to managing multiple identity goals, synergy/discord, and potential constraints Furthermore, each of these elements altered the resulting solution assembled by the families

TABLE 2
Types of Identity Goals

Identity Goal	Definition	Structure Example	Character Example
Building	A pursuit to establish a new family, relational, or individual identity in either structure or character or to assimilate new family members into existing practices	James/father "It [the vacation] has gotten us closer It's really made us a family our time together, nobody else's " (Higgins family)	Christi/mother "[During the vacation,] we would just go run or walk or something in the morning " Gary/father "Yeah " Christi/mother "We go to the gym separately Yeah, so that was kind of nice running together " (Warren family)
Transforming	A pursuit to alter family, relational, or individual identity in either structure or character	Leslie/mother "Being separated It [vacation without my husband] helped give me a chance to get away with the boys, clear my head, see everything in focus And then it was right after that when we came back that we left their father [son Dylan nods to confirm] " (Tanner family)	Ronda/mother "We rented bikes, and we rode into some of the residential areas, where you see people selling live chickens and fish and the typical wares and food of China We wanted to see the culture the heartbeat, I guess, of the area, and see where the people live for the girls to look at the culture, to be in it, smell it, look at it, get it on you, yeah " (Metcalf family)
Preserving	A pursuit to maintain family, relational, or individual identity in either structure or character	James/father "She has her kids twice during the week, I just have my kids every other weekend " Malina/mother "They kind of like to do their own thing, these two [nods toward father and his son Philip] watch sports together and it's like I'm gone " (Higgins family)	Lacey/mother "[The retreat was] for people that had adopted, and it was a Native American theme, so it was to educate about Native Americans and to help people that are not Native American who adopt them into their families to not forget their culture " (Carter family)
Reasserting	A pursuit to reestablish a family, relational, or individual identity that has previously ceased in either structure or character	Dina/mother "Our most important feeling on this [vacation] was—Curtis's children We missed a lot of time with them because of some issues Now, we have this opportunity to regain that relationship back " (Quigley family)	Mary/mother "I absolutely find myself more relaxed with our family in our little cabin in the mountains, that just feels like it's a centering piece We've been going to the same place for, before Madeline was born " (Dodge family)
Securing idealized	A pursuit to ensure either a romanticized past or a future family, relational, or individual identity in either structure or character	Dina/mother "We see we're getting older, and the [grand]babies are being born, you just don't want to miss out on any of that And we had the discussion one night that, I don't want Eva [granddaughter] to not know us, we just made that decision that we need to start trying to go out [to Colorado] " Curtis/father "She can look through pictures and see us, and know that we were there " (Quigley family)	Dan/father "I think [the vacation] was geared more towards getting the kids involved in skiing 'cause we wanted them to learn how to ski We wanted them to get excited about it because we're [points to Kendra/mother] going to go ski, and whether they ski or not is irrelevant They're going with us, so [Kendra smiles] " (Hardy-Harrison family)
Legitimizing	A pursuit to justify family, relational, or individual identity in comparison with a cultural ideal	Ronda/mother "We come from different ethnic groups, and so that's always a big thing in China—people noticing that Maddy and Sephora were with *us* We don't have a—the traditional, maybe what you might call traditional—get married and have your own kids, [father nods], biologically anyway I think that's one of our defining family characteristics " (Metcalf family)	Candice/mother "We went on the one trip, and I took all these [neighborhood] kids with me, and people were like, 'okay, that's really weird ' We just love being with kids [and] church is our biggest thing, we've got youth group We'll help with the outreaches, and stuff like that " (Dawson family)
Parting	A pursuit to leave behind or discard family, relational, or individual identity in either character or structure	Sabrina/daughter "[Our goal was to] just kind of spend family time before I went to college " [Kira, Beth/daughters confirm] Tara/mother "Yeah " Scott/father "Kind of figured it'd be the, the, the last time " (Samson family)	Todd/father "When you guys are all home, you'll kind of get into a fight and then carrying on about some things 'Cause I mean you guys would fight in the yard in your underwear over a shirt! That would go down as a good one [vacation] because the kids kind of grew up Everybody kind of grew up " (Diggerty family)

TABLE 3
Goal Management Approaches

Identity Goal Management Approach	Definition	Example
Prioritize	Giving precedence to some goals over others, this is *elective* when all agree and *imposed* when conflict occurs	"We don't really go our own directions We both work, so we think family vacations should be all of us doing things together " (Mason family, father)
Symbiotic activity	Interacting with the same offering in close proximity, but through *alternate* activities to achieve multiple goals simultaneously	"We went out after that and went shopping " (Christi/mother) "Christi got some shoes and some makeup, while the kids played " (Gary/father) "Where did you go?" (interviewer) "Just the outlet malls there in Silverthorne " (Christi) "Did everybody go shopping?" (interviewer) "Yeah!" (Katie/daughter) "Except me, I worked while they were at Silverthorne " (Gary) "That's true, but he was there " (Warren family, mother)
Parallel activity	Participating in the *same* activities but with limited direct interaction of the whole group (instead may participate as coalitions and individuals) to achieve multiple goals simultaneously	"[On our flight to Africa, we were] watching movies on the plane, each of our seats had a screen on it, so you could plug in, with a choice of like 30 movies and TV shows and music " (Wilson family, father)
Partition	Breaking the group apart into coalitions that focus on separate goals	"Oh, and you and me went to, the church " (Abbie/daughter) "Yeah, went to a mass " (mother) "I remember Six Flags! My aunt wouldn't let me go on the rides She thought I was too short " (Madison/daughter) "Yeah We split up " (Carter family, mother)

Assemble offerings around prioritized goals Mason family The Masons are a family of four Peter and Cathy tend to the daily rigors of work as a certified public accountant and a bank compliance manager, respectively, and their two children, Addison (11) and Bob (8), are active in school and sports activities The family took a trip to Black Hills, S Dak , with two primary goals reasserting and building family identity In opposition to everyday life, which pulls the family members apart, the vacation was a time to reconnect and "be a family" Furthermore, Peter and Cathy had been to this destination before as children and as a couple, so the vacation was an opportunity to assimilate Addison and Bob into the couple's practices, that is, a way to build family identity through shared experiences To manage multiple goals during their vacation, the Masons prioritized collective identity goals over all potential others As Peter explained, "We don't really go our own directions, we think family vacations should be all of us doing things together"

With regard to integration processes, families who adopted a prioritizing approach typically assembled offerings around the prioritized goals The Mason family spent nearly the entire trip together engaging in collective activities ("We did everything together"), which led them to integrate offerings from across firms and public venues

> "You get up in the morning together You're in the same room You have just one motel room We did everything together We usually swam every night " (mother) "We went to Mount Rushmore " (daughter) "We did a hike " (mother) "Then we went to the cave " (father) "After Dairy Queen, we went to Evan's Plunge " (mother) "You're forgetting we went through the national park with the buffalo" (father)

Thus, even in the simplest case, when goals are relatively straightforward and synergistic (same structural level and character components), families still moved outside a single firm's solution to satisfy multiple goals

In relation to the broader data set, families regularly prioritized a subset of their identity goals during their trip For example, the Murrays prioritized the couple "[Our trip] was more for Patrick and I We did every golf course up there" (mother) In contrast, the Diggertys prioritized their son Daren's individual identity goals "We kind of let Daren be in charge this time, it was kind of about him" (mother) Prior research indicates that when multiple identities are relevant, people prioritize some identities over others to manage identity conflict (Ahuvia 2005) Our findings expand this work to acknowledge that families also prioritize particular identities, but their task is more complicated given that the relevant identities not only are as individuals but also reflect collective and relational identity goals In contrast with the Masons, prioritizing one or more identity goals was sometimes forced when met with discord from other coalitions whose goals were shifted to the background For example, brothers Bryson and Karston Quigley's goal of trying out a new relational identity (snowboarding in the Rockies) was put on hold when they prioritized a goal of reasserting with their father's estranged children following a divorce As the mother said, "Our most important feeling on this [vacation] was wanting to get that time in with the kids that we missed out on in the last 13 years"

Family vacation packages are dominantly configured to offer a plethora of choices for smaller relational coalitions or individuals, but for families who prioritize collective goals, this may be counterproductive Recall the Samson family from our introductory example whose goals were mostly collective but highly difficult to achieve given the amount of time the family members spent apart In part, this distance was manufactured by how Disney structured the experience (separate activities targeted at multiple members). For these families, offering an array of diverse activities may act as a constraint to enacting collective goals. This can be likened to feature fatigue in products (Rust, Thompson, and Hamilton 2006), except that rather than decreasing the product's usability, the outcome of too many offerings directed at individuals is an inability to achieve the family's goals. In terms of the customer networks' solutions in our data, families frequently shifted offerings in support of prioritized goals. With high synergy and few constraints, such as in the Samson family, options that restrict the array and flexibility of a solution's offerings may better satisfy network goals.

Alternate participation: Locke family. Another common integration process occurred when families engaged with the same primary offering simultaneously but did so in different ways. We link this to the goal management approach of engaging in symbiotic activity. The term "symbiotic" comes from biology and typically refers to intimate connections among diverse organisms. Marketers have adopted the term to describe how dissimilar products, firms, or resources can work in concert for mutual benefit (Varadarajan and Rajaratnam 1986). Accordingly, we use symbiotic to describe instances in which families bring together dissimilar activities within the same context or close proximity to achieve common goals.

The Locke family, which includes Glen, a stay-at-home father, Callie, a certified public accountant, and Beau, their 14-year-old son, offers a useful case. Camping is one of the primary ways the family defines itself, though Glen and Beau have a much more adventurous and outdoorsy view than Callie. Her version of camping is staying in a trailer and driving to nearby restaurants. The Locke family expressed multiple goals for their camping trip to South Dakota. They described a building goal of assimilating Beau into the family's ideal of leaving nature more pristine than originally found:

> "We've tried to instill in him a good outdoor ethic ... taking care of where we're camping. We're leaving that better than we found it. [Beau smiles] So, we always try to, uh, incorporate some environmental lessons into our vacation." (Locke family, father)

The family also articulated several other goals, including securing idealized family memories ("[We want to] have good memories of being together" [mother]), reasserting the family's camping identity as apart from the rigors of work and daily activities ("Our motivation is to just do things as a family" [mother], "We're avid campers" [father]), and transforming Glen and Beau by trying out new activities such as tubing and go-carts. Given that most of the goals were collective in structure but differed in character, the Lockes were able to manage multiple goals by engaging in symbiotic activity. As Callie explained, "We don't usually feel like we all have to do the same thing, but we're always together when we're doing it."

Character discord often led to alternate participation, such as when Glen went to the mall with his family but hung out on a bench while Callie and Beau visited stores. Similarly, Callie read, watched, and photographed her family as they played in the pool next to her:

> "When we go swimming, she stays on the deck ..." (father) "I just usually get a book and sit in a lawn chair. ... I would never stay in the motel by myself and they go off, that just would never happen. ... If they do go-carts, I'll go with 'em and I'll ..." (mother) "Stand on the bridge or whatever ..." (son) "And watch 'em ... and take the pictures." (mother)

When structure synergy is high but character discord exists, alternate participation allows family members to resist the particular offering chosen (e.g., pool) while still supporting the family's overall identity goals (e.g., building, securing idealized, and reasserting collective identity) by engaging in the same primary offering in different ways (e.g., reading by the pool while the rest of the family swims). This allowed the Lockes to be together to accomplish collective goals, even as Glen and Beau worked toward their relational goal of trying new activities.

Alternate participation was common across families, and in many contexts, families needed to supplement the firm's solution with outside products and services (e.g., bringing a DVD player). In addition, firm policies could offer more flexibility to encourage alternate uses of offerings. For example, the Navarro family was similar to the Lockes in that most of their goals were at the collective level; however, the character elements of goals differed. Genoveva, a 12-year-old daughter, expressed an individual-level transforming goal of getting over her fear of heights ("I wanted to see if I can go on all the extreme rides [at Worlds of Fun]"). Although her father adamantly disliked roller coasters, he needed to be at the amusement park for the family to accomplish its other goals (e.g., preserving, reasserting, and securing idealized family identity):

> "I don't like roller coasters at all." (father) "I love roller coasters. It's like really my life." (daughter) "Big, big rides? I don't like it. ..." (father) "What were you [father] doing while they were [riding the Boomerang]?" (interviewer) "Well, I was watching. I say, 'No, I'm not going.'" (father)

By considering how symbiotic activity operates in families' choices, firms could integrate offerings that support various forms of participation into their solution. For example, Worlds of Fun might consider new ways for the Navarro father to support his daughter's transforming goal without riding the roller coaster, such as providing opportunities to document and mark her success (e.g., souvenir awards, photos). This strategy may improve the families' overall evaluation of the experience, which is currently framed as a win–lose proposition, with Genoveva being satisfied with the experience and her father feeling dejected. It also differs from a something-for-everyone approach because the intent is to offer activities that complement one another in support of network goals and to maintain proximity rather than entice members to go their own way.

Concurrent participation: Hardy-Harrison family. Recall that the Hardy-Harrison family is a newly blended family of five who went skiing in Colorado for their first vacation since the couple married. The Hardy-Harrisons' identity goals overlapped dramatically in character (all related to skiing) but departed with regard to structure (collective goals of building and securing idealized family identity, relational goals of preserving couple, parent–child, and sibling identities, and an individual goal for Kendra of reasserting her adventurous identity) As such, the Hardy-Harrisons often skied as a couple, as siblings, and as individuals, participating concurrently in the same activity but in diverse groupings and at different times and places We link concurrent participation to the parallel activity goal management approach We borrow the term "parallel"—first used by the child psychologist Mildred Parten (1932) to describe how children became absorbed in playing *beside* rather than *with* one another, and later used by Eleanor Maccoby (1951) to describe how children watch television together without interacting—because it wholly captures the behavior families described Privatized technologies (e g , iPods) frequently enabled parallel, rather than interactive, activity within the same context This resonates with Belk's (2007) discussion of the atomization of some previously shared possessions within families, such as the family television giving way to privatized, individually owned devices Parallel activity offered a goal management approach that enabled the Hardy-Harrisons to manage multiple goals simultaneously

> "We went [skiing] the year before   This is really a vacation that was geared more toward getting the kids involved in skiing   We wanted them to get excited about it because we're [points to wife Kendra] going to go ski They're going with us, so [Kendra smiles]   " (Hardy-Harrison, father)

This quotation illustrates that skiing enables the parents to build a new and secure an idealized family identity by assimilating the daughters into a practice that was important to them, both now and in the future Simultaneously, we know that skiing is important to the couple and to the parent–child coalitions (e g , mother and her daughters) and also preserves these relational identities Finally, skiing was central to Kendra's individual identity and enabled her to reassert this aspect of her character The continuity offered by ensuring that all members engage in the same activity helped the family build collective identity through shared experiences

Rather than forcing choice among or prioritization of identity goals, concurrent participation enables families to achieve multiple goals at different structural levels simultaneously For the Hardy-Harrisons, Ski Cooper and Panda Patrol ski school provided them with the necessary offerings to carry out their goals Currently, the family is not loyal to any particular ski resort, they refer to Cooper's ski school as "better than Breckenridge, better than Copper, [and] better than Winter Park" In addition, they went outside of Ski Cooper's solution to integrate necessary products and services Several opportunities exist for the firm to revise its solution to better match what the Hardy-Harrisons seek and improve their overall satisfaction For example, building in more flexibility for families to participate in different groupings at different skill levels would present a unique solution that differentiates Ski Cooper from other resorts This could take the form of central meeting points and one- to two-hour time slots in which children could ski with others at their level and then meet back up with older siblings or parents

Parallel activity was a common approach families adopted in the broader data set when character synergy and structure discord among goals were high The Wilson family all watched movies on the plane to Africa but did so from individual screens with headphones The Dodge family went to the street markets in Nanjing, China, and to the Shanghai Museum in different groupings and as a family at different times throughout their trip

> "When we went into the Shanghai museum when we took Madeline back to a piece of that because there were some parts of it we really thought were just fascinating and thought she should see, but Matt had been there earlier" (Dodge, mother)

As with other solutions based on a goal management approach of parallel activity, the number and heterogeneity of offerings would be limited, while the structure would need to be flexible

Assemble offerings around separate coalitions Carter family For some families, rather than prioritizing certain goals over others, partitioning identity goals enabled smaller coalitions or individual members to accomplish their own goals With a partitioning approach, families often broke into smaller groups for a portion of their vacation and assembled separate offerings around these coalitions For example, in the Higgins family, the father and his two sons went bike riding together without the mother In the Murray family, the father and son went to GameStop, while the mother and daughter went to Build-A-Bear

The Carter family offers a more in-depth look at this integration process Lacey Carter is a single mother of seven adopted children, ranging in age from 3 to 19 years The children are multiracial, joined the family at different times, and embrace backgrounds and interests spread as widely as their ages The Carters took a summer vacation to St Louis They had multiple goals, few of which overlapped in either structure or character Collective goals such as legitimizing and reasserting group identity competed with individuals' and smaller groups' preserving goals (i e , some defined by an interest in fashion/shopping, others by an interest in competitive activities, and still others as history enthusiasts) articulated by family members

Consistently, we observed more partitioning when discord among identity goals was high To illustrate, the Carter's collective goals required the family to engage in group activities and allow for time to reconnect as a family, and the latter goals required the family to disband into relational coalitions Rather than enlisting a firm with a broad mix of offerings that allowed members to all go to the same place, the Carters frequently broke into smaller groups to support their discordant identity goals and enlisted different service providers

> "We went to the Holocaust Museum   They went into the kids' one, and I went to the rest I'm pretty big on that stuff [history]" (Abbie, 19) "I'd rather go tubing   " (Sallie, 14) "I'd rather watch sports   " (Ajay, 12) "You and me went to, the church" (Abbie, 19) "Yeah, went to a

> mass " (mother) "I remember Six Flags " (Madison, 13) "Madison, who'd you go with, to the planetarium?" (interviewer) "My sister took her [and] some of the kids I probably stayed back with some We split up " (mother)

As this excerpt reveals, the family assembled diverse offerings around separate coalitions Considering the necessary volume of products and services used to manage the family's many identity goals, solutions were elaborate, both in number and in heterogeneity, when adopting this integration process Unlike with symbiotic activity when family members wanted to stay together despite character discord, families who assembled offerings around coalitions mostly embraced discord and chose separate offerings for individuals or smaller groupings

Prior research suggests that firms attend to individual interests and assemble offerings in an ad hoc way to accommodate as many people as possible (Goldstein et al 2002) Our data reveal that customer networks pay attention to goals at multiple structural levels and related to diverse character elements The Carter family, along with others, integrated offerings from across firms, rather than opting into one firm's solution As such, we propose that attempts to appeal to individual network members, based mostly on character elements (e g , a spa for mom, golf for dad, crafts for the kids), are not the most appropriate approach to reach families that have complex network identity goals Instead, firms appealing to families that have adopted a partitioning approach should allow them to customize offerings around multiple coalitions That is, firm solutions should consider packaging deals with broad partners that may not be intuitive but serve similar identity goals (e g , the Holocaust Museum, the planetarium, and Six Flags) and should allow families to opt in to and out of relational and collective activities

Several propositions emerged from our findings for further investigation and testing in other contexts Table 4 summarizes our research propositions, provides a rationale for each, and offers examples of how these might extend to other types of family decisions as well as to other types of networks We find that the degree of synergy/discord among networks' identity goals drives the goal management approach selected In turn, this has implications for the number, heterogeneity, and structural flexibility of offerings that firms should integrate into their solutions to improve overall network satisfaction

Discussion

The pervasiveness of networks picking and choosing certain elements of one firm's solution and then seeking additional offerings outside the solution to supplement their experiences provides empirical evidence of the disjuncture between firm solutions and those envisioned by customer networks Service providers that pay attention to how families assemble solutions and, more narrowly, to how families integrate a particular firm's offerings can revise existing value propositions to capitalize on these opportunities

Theoretical Contributions

Prominent in each of the families we studied and in contrast with the family decision-making literature was the presence of relational and collective goals This departs directly from the common assertion in family decision research that members go into group decisions with the intent of influencing or coercing others into concessions (Belch, Belch, and Ceresino 1985, Cotte and Wood 2004, Su, Fern, and Ye 2003) Instead, families made choices about which products or services to integrate into their solutions based on their collective and relational goals Prior work on business-to-consumer solutions has focused more narrowly on individual pursuits (Christensen, Cook, and Hall 2005, Sawhney 2006), even in settings in which relational goals are likely prominent We contribute a typology of seven identity goals consolidated across a diversity of family types that better capture what customer networks are trying to accomplish

Our findings not only establish the importance of relational and collective goals in designing solutions that better mirror family choices but also highlight the consequential role of synergy and discord among these goals Specifically, we identify two dimensions, goal character and structure, that are absent from extant literature Although character elements are often captured when firms attend to individual goals, structure elements only surface when we account for relational and collective goals By considering the extent to which character and structure elements overlap and depart, we generated a framework and research propositions that categorize how networks manage multiple identity goals and offer implications for how this changes solution design Specifically, we identify four primary integration processes from the customer network's point of view that emerge from the goal management approach they adopt (1) Prioritizing some goals over others drives networks to assemble offerings around prioritized goals, (2) symbiotic activity results in alternate participation, (3) parallel activity results in concurrent participation, and (4) partitioning goals drive networks to assemble offerings around separate coalitions Identifying these processes and further linking them to solution design contributes a much needed customer network perspective to the emerging literature on integration (Ghosh, Dutta, and Stremersch 2006, Lusch, Vargo, and Wessels 2008, Sridhar 2009, Tuli, Kohli, and Bharadwaj 2007) We elaborate further on how each of these four approaches requires reevaluation of solution designs that incorporate changes to the architecture and policies that characterize firm solutions

Managerial Implications

Our findings demonstrate that firm solutions fall short of what customer networks envision primarily because firms privilege individual goals as the central organizing framework for segmentation (Reed and Bolton 2005), which can and does undermine relational and collective goals In our findings, we illustrate specific cases of how firm solutions fall short and what firms might do differently to better meet customer needs In this section, we move beyond specific cases to provide guidance and tools for improved solution design

Fundamentally, we propose a shift in managerial thinking from individual to customer network satisfaction Such a shift explicitly recognizes that customer networks are not simply an aggregation of individual goals, but instead a dynamic interplay of individual, relational, and collective ones Our work empirically demonstrates what Bititci et al (2004) theorize—that network value propositions can differ from individual (network member) value propositions To enhance customer network satisfaction, managers need a deeper understanding of the dynamics, structure, and character of network goals Our findings uncover two concrete tools that managers can use to enhance customer network satisfaction and improve solution design

TABLE 4
Research Propositions

Proposition	Rationale	Family Example	Other Network Example
P_1 Networks *electively* prioritize goals with high structure and character synergy	When network members agree to emphasize particular structure (e g , collective) or character (e g , outdoorsy) goals, prioritizing those goals flows naturally It is voluntary rather than contested	A family with adolescents feels disconnected because of competing individual activities To *reassert* family identity, they prioritize a Monday family game night, leaving the weekend nights for individual and coalitional pursuits	Annual performance evaluations reveal that newly hired sales representatives feel detached from the company and its mission To *build* corporate identity, the company prioritizes a monthly morning coffee
P_2 Networks partition or prioritize goals with high structure and character discord	When conflict arises between both the level of goals and the preferred activities, network members must decide whether to break into smaller groupings to accomplish multiple goals (partitioning) or trade off some goals for others (imposed prioritizing)	Discord between teenage daughters from prior marriages with "nothing in common" leads their parents to impose a collective vacation in New York City where the girls share a room (to help *build* a coalitional identity), but they partition activities to *preserve* separate parent–daughter relationships	An office manager has younger workers who employ a multitasking, multitechnology work style that upsets and alienates older workers By arranging task forces around these different work styles, the smaller groupings have less conflict and accomplish more
P_3 Networks use symbiotic activity when goals have high structure synergy and character discord	When goals occur at the same level (e g , collective) but network members vary in their preferred activities, the network adopts this approach to accomplish multiple goals simultaneously Proximity allows members to address collective or relational goals by interacting together while engaging in separate activities	The children have drifted out of the family room (where the television is located) into the study space (where the computer is located) To *secure* their *idealized* family structure, the family redesigns their family room as a multipurpose space so even if everyone is doing something different, they are together	To pursue a more collective identity (*transform*), a marketing department made up of ambitious and diverse network members creates an attractive communal work/play space In this communal space, people can interact together while engaging in separate activities
P_4 Networks use parallel activity when goals have high character synergy and structure discord	When goals link to similar activities but occur at different levels, the network adopts this approach to accomplish multiple goals simultaneously By participating in the same activity as coalitions or individuals, networks can address goals at different levels while solidifying the character elements that unite them	Everyone in the family loves to run but at different paces and times of day To *preserve* the collective commitment to running, the family creates their own Facebook page with network member updates, photos, and links	To *build* collective, relational, and individual identities within the Harley-Davidson brand community, the online Harley Ride Planner allows members to coordinate rides in small group or as individuals, allowing for flexibility in time and distance while providing a common experience to all
P_5 When networks use a prioritizing approach, the opportunity to restrict member access contributes to overall network satisfaction	When networks emphasize a narrow set of collectively engaged goals, being able to opt in to a lower number of less diverse offerings may make it easier to achieve them	To *reassert* family identity, the family agrees on a multiday, river-rafting trip The family would need to rely on one another and would not be tempted away with their privatized technologies (e g , game boys, cell phones)	A company might prioritize a goal to *transform* its corporate identity to highlight sustainability efforts by restricting its suppliers to a limited number of vendors
P_6 When networks use a symbiotic approach, using multipurpose virtual and physical spaces contributes to overall network satisfaction	Using multipurpose spaces creates proximity to allow network members to address collective or relational goals while engaging in separate activities	The major impetus for the new Children's Hospital was to use recovery spaces in a multipurpose way for critically ill children to facilitate family activities in these spaces The hospital hopes to contribute to patient welfare by making it easier for families to be together with their ill children	Some day cares now offer parents the opportunity to observe and connect virtually with their children from work Day cares on the work site are highly valued because they facilitate relational goals without compromising professional ones

TABLE 4
Continued

Proposition	Rationale	Family Example	Other Network Example
P_7 When networks use a parallel approach, facilitating structural flexibility for the same activity contributes to overall network satisfaction	When goals link to similar activities but occur at different levels, flexible individual, coalitional, and collective groupings make it easier to solidify the character elements that unite the network	The whole family loves movies However, their preferences vary with the particular grouping of family members TiVo and Netflix only allow a single profile, rather than offering an interface that allows the family to select different subsets of members involved in each movie choice The family would be happy if there were a more effective way to customize	To reassert a corporate identity of good citizenship, an organization sponsors a volunteer day and encourages employees to sign up for various time blocks in small groups or as individuals to give back to their community
P_8 When networks use a partitioning approach, diverse offerings with structural flexibility contribute to overall network satisfaction	When networks break apart into separate coalitions and attempt to achieve a broader set of goals simultaneously, a larger number of more diverse offerings are required to achieve them	The family has an array of meals that are designed for four, two, or one person and include options with different dietary goals in mind Provisioning meals for different groupings of members who eat different diets at different times of day has become a major shopping challenge	Small groups within the Star Trek subculture separately take on multiple *legitimizing* and *reasserting* goals Utopia themes stimulate fan fiction, religious themes engender evangelism, military themes prompt trial of martial arts, and competitive themes drive showmanship at conventions (Kozinets 2001)

First, we introduce an identity goal typology in Table 2 that managers could use as a simple tool to appeal to prominent customer network identity goals In the same way that companies design offerings around activities and amenities, they could customize offerings around these identity goals The difference between this approach and the current design offerings is most prominent in the structural component of identity goals That is, when rock climbing is less about the individual activity and more about reasserting or building collective trust and efficacy (Wells, Widmer, and McCoy 2004), solutions should be structured around ways to engage coalitions and groups Certainly, some firms design solutions around structural identity goals For example, organizations employ rope courses to build community, integrating new members or discordant members into a shared team built on dependency and trust However, with our identity goal typology, firms could do much more to systematically design and communicate their offerings in ways that appeal to customer network identity goals When the majority of offerings are designed around arrays of activities and/or amenities, appeals that promise and deliver on helping networks build, transform, legitimize, part, and so on, offer distinctive value propositions for customer networks

Second, we identify four identity goal management approaches in Table 3 that managers could strategically use to deliver enhanced network satisfaction Modifying firm solutions to mirror customer integration strategies more directly would reduce constraints and the labor of integration that families face (Goldstein et al 2002) What distinguishes these four goal management approaches from current firm offerings is explicit recognition that synergy and discord among focal customer network goals dramatically shape solution design As we posit in our research propositions summarized in Table 4, goal management approaches are formulated in response to structure and character synergy/discord among customer network goals To better mark the difference between employing these identity goal management approaches and current design offerings, we consider each in turn

When the customer network has high structure and character discord among identity goals and uses a partitioning approach, current amenity and activity offerings may require little or no modification In this case, everyone does their own thing when and how they want, and a something-for-everyone approach may accommodate them It is important to note that though this is the most prominent firm-designed solution, in the context of family vacations, it is also a residual solution built around *not* being a customer network but rather a collection of free agents Few families set out on their vacation hoping that this will happen Within the families that did embrace this approach, solution designs often went beyond the boundaries of a single firm, so firms that seek nonintuitive partnerships that repeatedly surface in customer network solutions and establish flexible access and communication among these would likely improve network satisfaction

When there is high structure and character synergy, prioritization of goals flows naturally Current designs that segment along gender, age, or group size may be viewed as obstacles that families need to overcome for them to reach their goals together In many cases, this would require relatively modest adjustments to amenity and activity offerings already in place For example, infrastructures that accommodate customer networks comprised of diverse genders and ages who all want to do activities together will help them reach their goals In addition, with little added expense, many vacation venues could provide “opt-out alternatives” to help families avoid temptations Currently, opting out of a minibar key or parental controls on televisions is common, but with improved understanding of what families are trying to accomplish, firms could identify other temptations families could avoid

Similarly, when networks impose a prioritizing goal management approach (e.g., when they have discordant character and structure goals), they face enormous challenges. Researchers suggest that if families are forced to share in activities, it not only helps build, maintain, or reestablish collective identity but can have payoffs to individual well-being as well (DeVault 2000; Epp and Price 2011). For these customer networks, vacation venues that restrict access to individual pursuits and force them to interact in common spaces and activities may be attractive value propositions. Again, packages that allow networks to opt out of individual or relational activities in advance would help them achieve this structural rigidity without high additional costs to the firm. Although rigid structures may not be ideal for all firms, those with activities that lend themselves to this approach could more actively deliver on this value proposition.

The richest opportunities for designing new firm solutions to enhance customer network satisfaction are when customer networks use a symbiotic activity, parallel activity, or imposed prioritizing goal management approach. In each of these cases, the customer network in part or as a whole has discord but also aspires to attain collective goals. A review of theory and research on "family time" suggests that managing discordant individual and relational goals to attain collective goals is a pervasive problem for families in the United States (Epp and Price 2011). When networks have high structural synergy coupled with high character discord, firms can enhance overall network satisfaction by using multipurpose amenities and activities to enable networks to employ a symbiotic activity goal management approach. To do so, managers should design infrastructure that facilitates *activity* flexibility within common virtual or other spaces. Because activity partitioning is a common template for space design, such a shift in thinking could dramatically alter the organization and layout of many vacation venues from hotel rooms to theme parks. Certainly, some firms design solutions attentive to this approach. For example, when a restaurant sets aside an area in which young children can romp, watch videos, and play with toys, they are using the space in a multipurpose way to make it easier for families to enjoy a meal. However, our framework provides managers with the conditions under which this approach is most appropriate and direction for how to design more effective solutions around symbiotic activity.

Finally, when networks have high character synergy coupled with high structure discord, facilitating *structural* flexibility around the same activity would enhance overall network satisfaction. Managers could facilitate a parallel goal management approach with simple changes in how they design activity packages. By building activity packages that enable easy movements among and between individual, coalitional, and collective groupings, such as the ski resort example we described previously, managers would be aiding rather than running interference with customer network goals. In addition, by underscoring the synergistic character goals across different coalitions, they could help networks build or reassert collective identity. In this section, we have focused on two tools that vacation industry management firms could employ to improve solution design and enhance collective family satisfaction: a typology of identity goals and four distinct goal management approaches. In the next section, we argue that these two tools offer theoretical windows for improving firm solution design in varied contexts (other than vacations) and multiple customer networks (not just families).

Applications to Other Family Decision Contexts

The four goal management approaches extend to other family decision contexts that involve interplays of family, relational, and individual identity goals. Consider the important public policy challenge of getting families to exercise. Marketing scholarship tends to focus on individual goal pursuit (e.g., Tanner and Carlson 2009), but it is understood that behavior change is powerful when it is a collective pursuit and families play an important role in success or failure. Traditional decision frameworks point to the roles of individual family members during purchase (e.g., daughter initiates, mother purchases, father uses; Webster and Wind 1972) or to the relative influence of family members on the decision to buy workout equipment for the home, with the final decision hinging on the outcome of previous purchases (Su, Fern, and Ye 2003), product category expertise and involvement (Spiro 1983), effectiveness of negotiation strategies (Palan and Wilkes 1987), and power structures within the family (Commuri and Gentry 2005; Davis 1970). Our framework extends and challenges these perspectives to consider how relational and collective goals help better understand families' choices. For example, families might prioritize collective identity goals by hiking or bike riding as a family. Symbiotic activity would prompt families to go to the gym together but participate in different workouts. Parallel activity might occur in families that emphasize a particular type of exercise (e.g., a running family) but plan their runs for different times in smaller groups or as individuals to accommodate busy schedules. Finally, for families with distinct workout preferences and relational or individual goals, partitioning allows them to engage in separate activities.

Family food and grocery purchase decisions also illustrate the applicability of our framework. What constitutes family dinner can be questioned as family goals collide with those of coalitions and individuals. Making family dinner a priority is a common narrative in marketing campaigns aimed at rescuing this tradition from the pulls of daily life. Using a prioritizing approach, families sit down at the table to share a meal. However, families might also use a symbiotic approach, eating together around the table but eating different meals based on distinct food preferences and allowing smart phones and other distractions at the table. Solutions that would satisfy these families include diverse meals that can be prepared simultaneously in smaller portions. Many families employ a parallel approach with members eating the same basic meal but in different locations and times. In such cases, family traditions such as "spaghetti and meatballs on Tuesdays" still service collective goals, even though members may be eating later or watching television separately. Other families adopt a partitioning approach. For example, mother and son eat pasta together when she gets home from work, daughter grabs fast food after soccer practice, and father heats up frozen pizza after work Each goal management approach prompts a different array of grocery choices for families Meal-assembly chains that enable families to prepare large meals in advance and freeze them, such as Dream Dinners, help families that use a prioritizing or parallel approach but do not satisfy families that adopt a symbiotic or partitioning approach Again, the goal management approach is distinct from a relative influence framework that reveals individual family members' negotiating and persuading one another about which groceries to buy It also departs from research on individual food choices within group settings, in which individuals are swayed by variety needs or the unanimity of group opinion (Ariely and Levav 2000, Quester and Steyer 2010) When goals are relational or collective and not just individual, our framework provides unique insights over prior decision-making research

Applications to Other Customer Networks

Future investigations could apply our propositions and framework to other types of networks (see Table 4) Here, we further consider applications and outline potential boundaries Prior research reveals many similarities between families and other customer networks, such as organizations, brand communities, and subcultures First, comparable to families, these other groups have similar structures that include a collective, smaller internal groupings, and individuals Organizations house departments, teams, units, or regions (Bell, Tracey, and Heide 2009, Fang et al 2008) Brand communities make distinctions among subsets of members (Muñiz and O'Guinn 2001, Schau, Muñiz, and Arnould 2009) Subcultures also contain internal groupings differentiated by their commitment to and participation in the group (Schouten and McAlexander 1995) Second, these customer networks are likely to have overlapping and divergent goals that occur at distinct levels, making the potential for synergy/discord among goals probable (Bagozzi and Dholakia 2006, Mathieu et al 2008) Finally, these networks must manage multiple goals, with implications for how they will integrate offerings into solutions

Diverse studies provide evidence that our identity goal typology could be robust across networks Consistent with brand communities striving to achieve the goals outlined in our framework, Schau, Muñiz, and Arnould (2009) compare nine brand communities to identify a set of value-creating practices Welcoming practices that pull new members into the fold of the community point to building goals (Schau, Muñiz, and Arnould 2009) Milestone practices mark rites of passage and are likely preceded by transforming goals (Muniz and O'Guinn 2001) Staking practices, also found in subcultures (Schouten and McAlexander 1995), are used to distinguish membership among different groups within the community, indicating the presence of preserving goals Justifying practices, described as "deploying rationales generally for devoting time and effort to the brand," signal that brand communities have legitimizing goals (Schau, Muñiz, and Arnould 2009, p 44, see also Kozinets 2001) Furthermore, organizations reassert collective identity through company retreats, and the flow of turnover and new hires necessitates both parting and building goals Our typology may open up additional research areas when applied to other customer networks

Families differ from other customer networks in ways that highlight boundary conditions Families are typically smaller in membership and more tightly linked through blood, marriage, or moral/social ties, and intergenerational relationships may be more prominent than in other customer networks (Galvin, Bylund, and Brommel 2004) To illustrate, both organizations and brand communities have concerns about their legacies, but the intergenerational nature of families may be more salient than in other customer networks By definition, families have a past and a future, but new organizations or emerging brand communities have yet to develop a sense of history Thus, legitimizing goals may be more prevalent in emerging organizational and brand community contexts Furthermore, given that membership is more fluid and voluntary, such as when lifestyle changes prompt movement out of subcultures or experience and expertise fuel changes in employment, parting goals may play a greater role in these customer networks than in families

We also speculate about extensions and boundaries of our goal management approaches Organizations and brand communities prioritize some goals over others in either imposed or elective ways However, in nonfamily contexts, motivations to prioritize certain collective or relational goals might require incentives beyond collective well-being The prevalence of caring and sharing within families continues to distinguish them from organizations in which motives are more often linked to exchange benefits (Belk 2010) As in families, political and power structures affect which goals are prioritized when the choice is imposed In brand communities, status incentives, rather than ensuring long-term group functioning, may result in prioritizing particular relational or individual goals over others

Symbiotic approaches also are likely to generalize to other networks An organization might focus on all organizational-level goals, but teams or business units would contribute different competencies and activities toward achieving collective goals Solutions would accommodate alternate participation from different groups while encouraging proximity that promotes the easy exchange of information and collaboration For subcultures and brand communities that adopt a symbiotic approach, companies should facilitate collective goals while offering and rewarding diverse ways to contribute For example, brand community members may want to *preserve* Apple's innovative reputation by improving the usability of the newly released iPhone To enable alternate forms of participation, Apple could host a competition for designing new applications, create forums for providing ratings/feedback, and offer free trials to community members who write blogs Proximity could be simulated through online forums and news releases that keep members informed about the group's collective activities

Because brand communities and subcultures are organized around a specific brand or activity (Muniz and O'Guinn 2001), character synergy among goals is likely for these networks Furthermore, these networks frequently are geographically dispersed, with less formal ties than families or organizations, so they often participate in activities in smaller groupings or as individuals rather than as an entire group Thus, brand communities regularly would engage in parallel activity to manage multiple goals Although this approach may be much less likely in organizations that hire for distinct competencies rather than like-mindedness, there are examples in which structure discord might be high and character synergy may surface, such as in a university context in which research activity happens concurrently in smaller coalitions and as individuals

Discord and tensions are natural within a healthy community, and embracing distinctions among groups can actually strengthen a brand community (Fournier and Lee 2009) Thus, partitioning is likely, and companies should offer a diversity of ways for brand community members to get involved to support the distinct goals of smaller groupings Organizations also may adopt a partitioning approach, such as when business units within a company pursue separate goals to make efficient use of specialized skills However, as in families, this approach may produce negative downstream consequences for organizations, such as fostering a silo mentality, promoting competition among business units, and engendering disputes over shared resources Solutions could incorporate structural flexibility, allowing employees to move across cross-functional project teams Similarities and distinctions between families and other types of customer networks, as we outline here, offer potentially fruitful avenues for further research

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Christian Homburg, Michael Müller, & Martin Klarmann

When Should the Customer Really Be King? On the Optimum Level of Salesperson Customer Orientation in Sales Encounters

In today's age of relational selling, a key challenge for salespeople is to determine the degree to which their customer-oriented behaviors drive sales performance. Therefore, this study analyzes whether a salesperson's customer orientation in sales encounters has an optimum level with regard to sales performance and customer attitudes. Using triadic data from a cross-industry survey of 56 sales managers, 195 sales representatives, and 538 customers, the authors provide strong empirical support for a curvilinear, inverted U-shaped effect of a salesperson's customer orientation on sales performance, whereas the effect of customer orientation on customer attitudes is continuously positive. Moreover, the findings reveal that the optimum level of customer orientation with regard to sales performance is higher for salespeople selling individualized products, in firms pursuing a premium price strategy, and in markets with a high degree of competitive intensity.

Keywords: personal selling, customer orientation, sales encounter, salesperson performance, customer satisfaction

Customer orientation has become a key construct in the marketing literature. On the one hand, researchers have studied the customer orientation of firms. In this research stream, it is often subsumed under the larger concept of market orientation (e.g., Kohli and Jaworski 1990; Narver and Slater 1990). On the other hand, many studies examine the customer orientation of individual employees, especially salespeople (e.g., Franke and Park 2006; Hartline, Maxham, and McKee 2000).

Saxe and Weitz (1982) introduced the concept of salesperson customer orientation to the marketing literature nearly 30 years ago to oppose the prevalent selling orientation of many salespeople. Since then, salesperson objectives have changed dramatically. "The salesperson's new imperative is to help forge relationships and heighten cooperation with customer firms" (Hunter and Perreault 2007, p. 16). In this new environment, customer-oriented behaviors, such as identifying customer needs and adapting the offer, have become key elements in building relationships (Cannon and Perreault 1999; Palmatier, Scheer, and Steenkamp 2007).

At the same time, adopting customer-oriented behaviors also requires substantial resources, in terms of both salesperson time (e.g., Saxe and Weitz 1982) and complexity costs arising from customizing products and processes to meet customer needs (e.g., Niraj, Gupta, and Narasimhan 2001). According to their meta-analytic finding that there is no clear effect of salesperson customer orientation on sales performance, Franke and Park (2006, p. 700) warn that "the costs of implementing customer-oriented selling may be higher than salespeople realize." Thus, it is important for salespeople in today's sales environments to ask, "How right should the customer be?" (Anderson and Onyemah 2006, p. 59).

More formally, this amounts to the important question whether there is an optimal level of a salesperson's customer orientation with regard to sales performance. Using a rich set of survey data from 56 sales managers, 195 sales representatives, and more than 500 customers, this study addresses this question. In this context, three additional issues need to be considered.

First, it is highly likely that the magnitude of the optimum level of customer orientation depends on product and market characteristics. For example, Tuli, Kohli, and Bharadwaj (2007) find that a key problem of many suppliers of highly individualized customer solutions is that they still lack proper understanding of their customers' businesses. At the same time, according to Verbeke et al. (2008), a deep understanding of a customer's needs may even reduce sales performance, if the sales task is highly structured (as is often the case for standardized products). Therefore, we test whether product individuality as well as product importance, price positioning, and competitive intensity affect the optimum level of customer orientation.

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

Second, because of today's importance of developing long-term customer relationships, the utility of using financial sales performance as outcome variable in sales research has been questioned (e g , Hunter and Perreault 2007) In particular, scholars fear that this may be a wrong measure in a relational selling context because it neglects long-term customer reactions to a successful sale Therefore, in this study, we also consider customer attitudes as outcomes of customer orientation Here, the existence of an optimum level is specifically not expected

Third, scholars have criticized that the concept of salesperson customer orientation has remained somewhat vague and imprecise (e g , Schwepker 2003) Perhaps for this reason, instead of studying the concept as a whole, recent research has focused on specific behaviors and traits that can be considered customer oriented according to the original definition Examples include a predisposition to meet customer needs (Brown et al 2002), the tendency to build personal relationships with customers (Donavan, Brown, and Mowen 2004), and an employee's customer need knowledge (Homburg, Wieseke, and Bornemann 2009) In line with this development, this study focuses on salesperson customer orientation in the context of sales encounters because sales encounters represent a supplier's most important points of contact with a customer in a business relationship (e g , Verbeke and Bagozzi 2000)

Conceptual Background

Customer Orientation in Sales Encounters

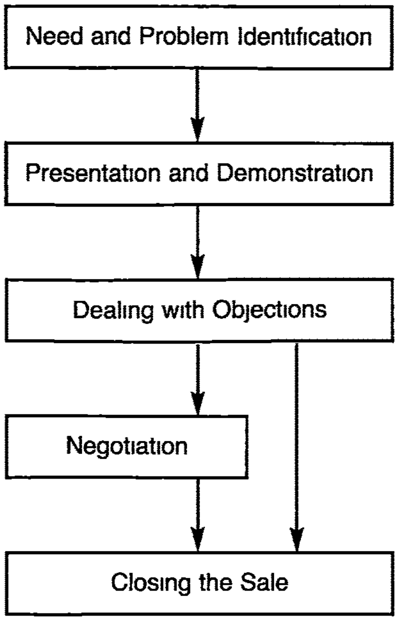
When Saxe and Weitz (1982) introduced the concept, they characterized salesperson customer orientation as commitment to understanding and meeting a customer's needs and interests and ensuring long-term customer satisfaction Against this background, we define "salesperson customer orientation in sales encounters" as the degree to which a salesperson identifies and meets customer needs and interests in the different stages of a sales encounter

This definition calls for further specification with regard to the different stages of a sales encounter Typically, five major stages are considered (e g , Jobber and Lancaster 2006) (1) the need identification stage, (2) the presentation stage, (3) the objections stage, (4) the negotiation stage, and (5) the closing stage In each stage, a salesperson can behave more or less customer oriented Thus, as Figure 1 depicts, customer orientation in sales encounters can be thought of as a construct with five dimensions, each corresponding to one specific stage in the encounter

First, in the need identification stage of a sales encounter, a key challenge for salespeople is to understand a customer's requirements precisely Thus, "identification of customer requirements" is the first dimension of customer orientation in sales encounters We define it as behaviors aimed at identifying the customer's interests, goals, and other product-related needs

Second, in the presentation stage of a sales encounter, customer orientation manifests by offering products that correspond to specific customer needs while clarifying the customer's benefits (Dwyer, Hill, and Martin 2000) Therefore, "presentation of customer solutions" is the second dimension of customer orientation in sales encounters We define it as communication behaviors that focus on the products and services that meet customer needs

FIGURE 1
Dimensions of a Salesperson's Customer Orientation in Sales Encounters



Stages of a Sales Encounter (Jabber and Lancaster 2006, p. 250)	Dimension of Customer Orientation in Sales Encounters	Definition
Need and Problem Identification	Identification of customer requirements	Behaviors aimed at identifying the customer's interests, goals, and other product-related needs
Presentation and Demonstration	Presentation of customer solutions	Communication behaviors focusing on the products and services that meet customer needs
Dealing with Objections	Collaborative handling of objections and disagreements	Behaviors aimed at stimulating customer objections and disagreements and finding an integrative solution
Negotiation	Consideration of customer interests	Behaviors aimed at achieving an agreement in sales negotiations by finding a compromise between the interests of the supplier and the interests of the customer
Closing the Sale	Use of informative closing techniques	Behaviors that emphasize the use of information in the closing stage of a sales encounter

Third, in the objection stage of a sales encounter, the conflict "inherent in buyer–seller relationships" (Malhotra 1999, p. 118) is likely to become apparent. Here, customer-oriented salespeople employ a collaboration approach (Weitz and Bradford 1999) by actively exchanging information and creatively identifying mutually beneficial alternatives. We define this "collaborative handling of objections and disagreements" as behaviors aimed at stimulating customer objections and disagreements and finding an integrative solution.

Fourth, because the collaboration approach cannot be applied to all conflicts of interest (Weitz and Bradford 1999), it is necessary to engage in compromising in the negotiation stage of a sales encounter. Here, customer orientation manifests as "consideration of customer interests," which we define as behaviors aimed at achieving an agreement in sales negotiations by finding a compromise between the interests of the supplier and the interests of the customer.

Fifth, for customer-oriented salespeople, closing a sale becomes "relatively straightforward" (Brooksbank 1995, p. 62). Instead of employing specific persuasion tactics that customers often perceive as manipulative and that reduce trust (Hawes, Strong, and Winick 1996), salespeople rely on information (Saxe and Weitz 1982). Therefore, in the closing stage of a sales encounter, customer orientation becomes apparent through the "use of informative closing techniques," which we define as behaviors that emphasize the use of information to close a sale.

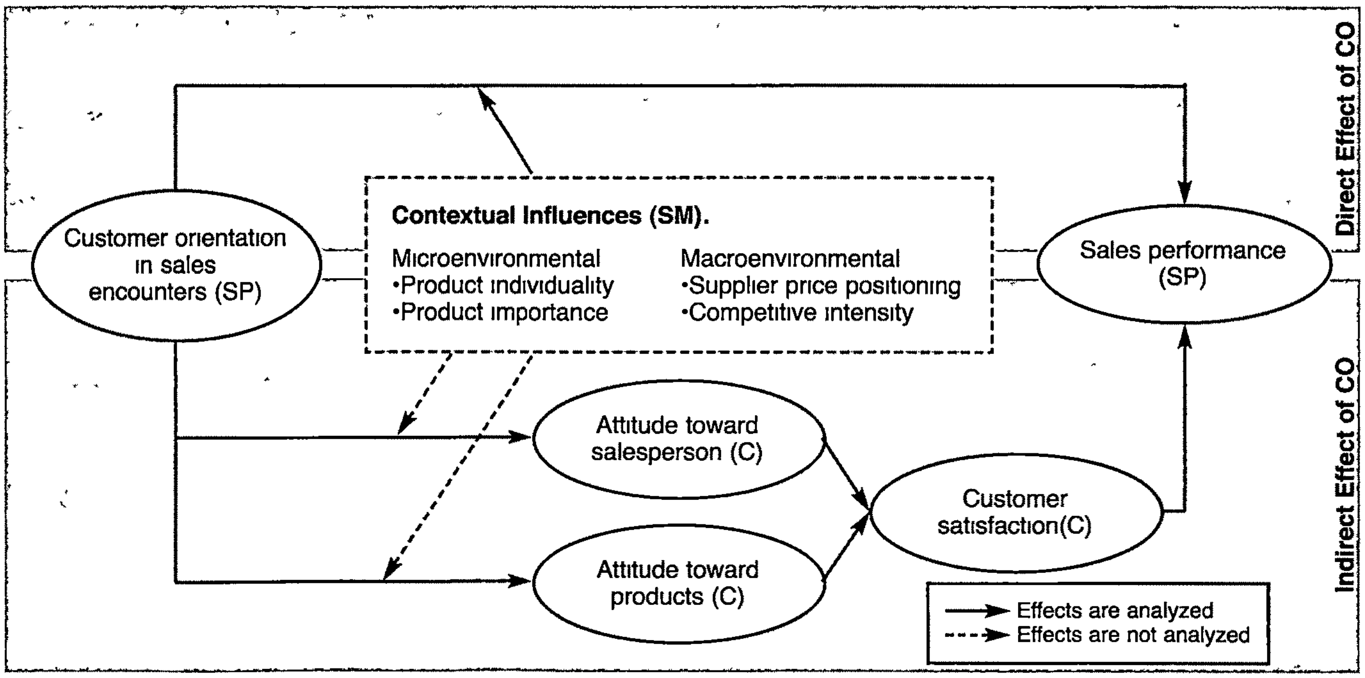
Conceptual Framework

In this study, we link salesperson customer orientation to key outcome variables. Figure 2 presents an overview of the resulting conceptual framework.

Outcomes of a salesperson's customer orientation in sales encounters. In relational sales environments, financial sales performance may not be a sufficient performance measure, because it neglects more long-term customer reactions (Hunter and Perreault 2007). Therefore, in this study, we consider two types of outcomes. As a financial outcome, we define "sales performance" as the financial result of a salesperson's selling activities—for example, the achieved sales volume or contribution margin (Oliver and Anderson 1994). Regarding customer reactions, two attitudinal constructs are included. First, customers form an impression of the salesperson. Against this background, the research model includes a customer's attitude toward the salesperson, which is the degree to which the customer exhibits a learned predisposition to respond favorably to the salesperson. Second, customers form judgments of a supplier's products. Therefore, we also consider a customer's attitude toward a supplier's products, which is the degree to which the customer exhibits a learned predisposition to respond favorably to the supplier's products. These constructs are then linked to "customer satisfaction," which we define as the customer's overall evaluation of purchase and consumption.

In turn, customer satisfaction also links to sales performance. Thus, the model includes both a direct and an indirect link from salesperson customer orientation to sales performance. As we explain in more detail in the "Hypotheses Development" section, in general these links reflect benefits and costs of customer orientation. More specifically, the indirect link from customer orientation through attitudes and satisfaction to sales performance captures one specific benefit of customer orientation. As we mentioned previously, this benefit is particularly important because it

FIGURE 2
Conceptual Framework



Notes: (SP) Salesperson data, (SM) sales manager data, and (C) customer data.

addresses possible long-term effects of salesperson customer orientation At the same time, it is highly likely that many other benefits of customer orientation are not covered by the indirect effect For example, Cronin, Brady, and Hult (2000) find that the degree to which services are adapted to the customers' needs (labeled in their study "service value") has a direct effect on loyalty intentions that is three times as strong as an indirect effect through customer satisfaction The direct link from customer orientation to sales performance covers these remaining benefits as well as all the costs of customer orientation

Contextual influences In his contingency framework for understanding salesperson performance, Weitz (1981) proposes that the effectiveness of salesperson behaviors strongly depends on macroenvironmental and microenvironmental variables Thus, this study also analyzes the influence of four contextual variables (two of every type) on the effectiveness of salesperson customer orientation with regard to sales performance In this regard, we focus on the direct link from customer orientation to performance Thus, we assess whether the optimal level of customer orientation varies depending on the context of the sales encounter

With regard to microenvironmental variables, we examine two characteristics of the customer buying task (Weitz 1981) Product individuality is the degree to which a supplier offers individualized products, and product importance is the general importance of a supplier's products and services to the customers With regard to macroenvironmental variables, we consider two facets of the firm's competitive position Supplier price positioning is a supplier's relative price level, and competitive intensity is the degree of competition in a marketplace (Kohli and Jaworski 1990)

Hypotheses Development

Effects of Customer Orientation in Sales Encounters

We argue that a salesperson's customer orientation in sales encounters has a nonlinear, inverted U-shaped relationship to sales performance, whereas its relationship to customer attitudes is continuously positive This implies that there is an optimum level of customer orientation with regard to sales performance but not with regard to customer attitudes

Our argument is based on a distinction between two ways that salesperson customer orientation affects salesperson financial performance On the one hand, customer-oriented behaviors trigger customer reactions that positively affect revenues and profits through increased sales volumes and higher prices We refer to these effects as benefits of customer orientation On the other hand, customer-oriented behaviors require inputs in terms of salesperson resources and firm resources that may negatively affect revenues and profits and, thus, salesperson financial performance We refer to these effects as costs of customer orientation

The reasoning behind our nonlinear hypothesis is based on the idea that the law of diminishing returns applies to the benefits of increasing customer orientation with regard to sales performance, whereas costs increase steadily We outline these ideas in more detail next

Diminishing benefits of customer orientation in sales encounters By identifying and satisfying customer needs, customer-oriented salespeople create customer value (e g , Brady and Cronin 2001, Franke and Piller 2004) This added value increases the attractiveness of a firm's offering and thus is a strong direct predictor of customer purchasing intentions (Cronin, Brady, and Hult 2000) Thus, customers are likely to respond to increases in customer value through customer orientation by purchasing more These benefits of customer orientation have been studied extensively Salesperson customer orientation has been shown to drive sales volume through increases in cross-buying (Siders, George, and Dharwadkar 2001), customer retention (Dean 2007, Jones, Busch, and Dacin 2003), and immediate purchases (George 1991)

At the same time, customers also reward additional value of a supplier's products with a higher willingness to pay (Pihlstrom and Brush 2008) Consistent with this effect, Homburg, Wieseke, and Bornemann (2009) find that customers are willing to pay more if the salesperson possesses a profound knowledge of their needs Thus, salesperson customer orientation should also translate into better salesperson financial performance through increased revenues and margins

However, some recent studies suggest that customer-oriented behaviors are particularly effective in creating customer value if they help customers satisfy their core needs Beyond that, increases in customer orientation add less value for the customer For example, with regard to the first dimension (i e , the identification of customer requirements), Verbeke et al (2008) find that understanding the core needs of the customers is an important source of value creation, whereas understanding intricate details of the customer's needs is not Likewise, regarding the second dimension (i e , the presentation of customer solutions), Franke, Keinz, and Steger (2009) find that adapting a product to the customers' needs is much more valuable if it includes features with which they are highly involved

This logic also extends to the other dimensions of customer orientation Regarding the third and fourth dimension (i e , collaborative handling of objections and disagreements and consideration of customer interests), Weitz and Bradford (1999) argue that customers appreciate collaboration and compromise approaches to buyer–seller conflicts more if they pertain to issues perceived as important Similarly, with regard to the use informative closing techniques (i e , the fifth dimension), strategies such as summarizing the offer should focus on main benefits (e g , Jobber and Lancaster 2006) Thus, the incremental benefits of increasing customer orientation are greater if the salesperson's initial level of customer orientation is low, which implies that there are diminishing benefits of customer orientation in sales encounters

Costs of customer orientation in sales encounters Prior research has repeatedly noted that increasing salesperson customer orientation is a resource-intensive endeavor (e g , Franke and Park 2006, Kumar, Venkatesan, and Reinartz 2008) In particular, costs arise from salesperson time and in terms of added complexity for the selling organization

Implementing a customer orientation requires a lot of time (e g , Saxe and Weitz 1982), and this applies to all its dimensions For example, regarding the first dimension (i e , the identification of customer requirements), gaining insights into customer preferences is a lengthy process (Franke, Keinz, and Steger 2009) In addition, adapting sales presentations to the needs of the customer instead of using a "one-size-fits-all" style presentation (the second dimension) requires more preparation time Likewise, finding integrative solutions or compromises in conflicts between buyers and sellers instead of relying on persuasion and/or pressure "involves the expenditure of considerable time and effort" (Weitz and Bradford 1999, p 247)

These time requirements may affect financial salesperson performance because they are associated with important opportunity costs Salespeople wanting to increase their customer orientation need to reallocate how they spend their time They are required to spend more time per customer, which reduces the total number of customers they can serve at all Thus, increasing customer orientation means shifting resources from customer acquisition to customer retention, which does not necessarily improve performance (e g , Reinartz, Thomas, and Kumar 2005) In addition, in the remaining customer relationships, salespeople must spend relatively more time on acquiring information and adapting their offer and less on traditional selling activities, such as promoting and persuading (Weitz and Bradford 1999) This may also result in fewer sales opportunities and, thus, reduced salesperson financial performance

In addition, customer-oriented salesperson behaviors result in offerings that are adapted to the specific needs of the customer As Joshi (2010, p 94) notes, salespeople are "preeminent among the individual-level drivers of product modifications within organizations" Consequently, salesperson customer orientation is likely to be associated with complexity costs for the selling organization For example, Tuli, Kohli, and Bharadwaj (2007) find that for firms offering their customers comprehensive product solutions, overcoming organizational complexity is a key challenge In particular, to maintain the required flexibility for offering customized products, the efficiency of these organizations is reduced (Gilmore and Pine 1997) Such additional complexity results in "higher customer service costs and thus lower customer profits" (Niraj, Gupta, and Narasimhan 2001, p 7) Thus, it reduces salesperson financial performance

Optimal level of customer orientation in sales encounters Salespeople wanting to increase their customer orientation need to focus on fewer customers, and their offerings will be more expensive to produce Coupled with diminishing returns of customer orientation, this indicates that the relationship between customer orientation and sales performance is shaped in the form of an inverted U, implying the existence of an optimum level Accordingly, we hypothesize the following

H_1 The relationship between a salesperson's customer orientation in sales encounters and his or her sales performance is curvilinear in the shape of an inverted U

Effects of customer orientation in sales encounters on customer attitudes Other than with regard to sales performance, we expect that the effect of customer orientation on customer attitudes is continuously positive With regard to attitudes toward the product, it is highly likely that the superior value of products and services sold by customer-oriented salespeople results in more positive customer evaluations (e g , Woodruff 1997) Several empirical studies support the existence of a positive relationship between customer orientation and customer attitudes toward the offering (e g , Brady and Cronin 2001, Goff et al 1997)

In addition to enhancing product evaluations, customer-oriented behaviors are likely to reflect well on the salesperson We expect that customers appreciate salespeople who they perceive in sales encounter as being responsive to their needs Again, several studies support the existence of a positive effect of salesperson customer orientation on customer attitudes toward the salesperson (e g , Brady and Cronin 2001, Ramsey and Sohi 1997)

Thus, there is reason to expect a positive relationship between salesperson customer orientation and both types of attitudes At the same time, there is little to suggest that increases in salesperson customer orientation are associated with any significant costs in terms of customer attitudes Consequently, it seems unlikely that situations arise in which customer attitudes deteriorate as a result of increases in salesperson customer orientation Thus, we hypothesize the following

H_2 The relationship between a salesperson's customer orientation in sales encounters and customer attitudes toward the salesperson is continuously positive

H_3 The relationship between a salesperson's customer orientation in sales encounters and customer attitudes toward the supplier's products is continuously positive

Effects of Customer Attitudes

Consistent with previous research (e g , Crosby and Stephens 1987), we expect that customer attitudes are strong drivers of overall customer satisfaction Thus, we hypothesize the following

H_4 The relationship between a customer's attitude toward the supplier's products and customer satisfaction is continuously positive

H_5 The relationship between a customer's attitude toward the salesperson and customer satisfaction is continuously positive

Similarly, because customer satisfaction is positively associated with outcomes such as increasing share of wallet (e g , Keiningham, Munn, and Evans 2003), we predict the following

H_6 The relationship between customer satisfaction and sales performance is continuously positive

These relationships are well established in sales research Thus, in Table 1, we provide only a brief summary of the rationale behind them

TABLE 1
Outline of H_4–H_6

Investigated Relationship	Expected Effect	Basic Rationale for Hypotheses	Selected Supporting Literature
Customer's attitude toward a supplier's products → customer satisfaction	Continuously positive (H_4)	•Customer satisfaction with the supplier represents an overall evaluation of the business relationship and is determined by various factors •In this context, a positive attitude toward the salesperson and toward a supplier's products represent two major antecedents of overall customer satisfaction •Empirical support for positive impact	Crosby and Stephens 1987, Goff et al 1997, Humphreys and Williams 1996
Customer's attitude toward the salesperson → customer satisfaction	Continuously positive (H_5)		
Customer satisfaction → sales performance	Continuously positive (H_6)	•Customer satisfaction is a strong driver of customer loyalty •Thus, increasing customer satisfaction is associated with increasing willingness to pay, positive word of mouth, and future purchases •These benefits are reflected in salesperson performance •Empirical support for positive impact	Ahearne, Mathieu, and Rapp 2005, Anderson 1998, Keiningham, Munn, and Evans 2003

Hypotheses on Moderating Effects

The optimum level of customer orientation with regard to sales performance is likely to vary with contextual influences In this section, we discuss the impact of four such contextual variables on the optimum level of customer orientation product importance, product individuality, a supplier's price positioning, and competitive intensity

Product importance According to the theory of perceived risk (e g , Bettman 1973), customers perceive buying decisions as risky in terms of whether the product meets their requirements and the magnitude of adverse consequences when buying the wrong product (e g , Dowling and Staelin 1994) Thus, we expect that customers' perceived risk is greater for important products In particular, with important products, the adverse consequences of buying a wrong product, such as monetary losses due to replacement costs or, in business-to-business settings, due to production downtimes, are more substantial (McQuiston 1989) As a result, to reduce perceived risk, customers have a higher need for information and assistance

Thus, customers buying important products are more likely to value customer-oriented behaviors in the course of a sales encounter For example, in the need identification stage, customers are likely to show more appreciation for any efforts aimed at understanding their specific needs In the presentation stage, customers are likely to respond more positively to offerings adapted to their specific needs Here, customer-oriented salespeople may be able to reduce perceived risk by offering additional services, such as specific guarantees Likewise, a collaborative approach to handling disagreements will be more valuable because it can be interpreted as nonopportunistic As a consequence, the optimum level of a salesperson's customer orientation is likely to be higher with important than with unimportant products Thus, we hypothesize the following

> H_7 The optimum level of a salesperson's customer orientation in sales encounters with regard to sales performance is higher if a supplier's products are of high rather than low importance to the customer

Product individuality In many industries, suppliers have begun offering their customers highly individualized solutions, in which products are customized to meet the customers' specific needs (Tuli, Kohli, and Bharadwaj 2007) In this kind of selling environments, customer-oriented salesperson behaviors play a crucial role in determining the success of a solution supplier's products In particular, salespeople are essential to understanding the specific customer needs and ensuring necessary product modifications (Joshi 2010) This is particularly so because customers may not be aware of some of their needs (Simonson 2005) However, many solutions that salespeople offer are still ineffective in this regard, even though customers demand a better understanding of their needs, especially with regard to their own businesses (Tuli, Kohli, and Bharadwaj 2007) Thus, in environments in which highly individualized products are offered, increasing salesperson customer orientation is still a highly valuable strategy

This situation is different for standardized products Verbeke et al (2008) find that a salesperson's general mental ability (and his or her ability to understand specific customer needs) is more strongly related to sales performance in situations in which highly individualized products are sold Moreover, for more standardized products, Verbeke et al argue (p 55) that "customers may perceive the development of highly complex and creative business solutions as inadequate" Thus, with standardized products, customer orientation seems to be much less valuable This leads to the following hypothesis

> H_8 The optimum level of a salesperson's customer orientation in sales encounters with regard to sales performance is higher if a supplier's products are individualized rather than standardized

Supplier's price positioning We expect that the optimum level of a salesperson's customer orientation in sales encounters varies depending on the supplier's price positioning From a customer's point of view, a supplier's general price level indicates the quality of its products and, accordingly, the equivalent value a customer receives (e g , Rao and Monroe 1989) Consequently, if a supplier's price level is substantially above the market average, customers expect additional benefits in return for accepting higher prices

As a primary information source for the customer, salespeople must be able to justify higher prices On an overall basis, a salesperson's customer-oriented behaviors in the single stages of a sales encounter may strengthen a customer's benefit perceptions For example, through the definition of customer requirements and the presentation of appropriate customer solutions, salespeople may be able to create an equivalent value for the supplier's higher prices

However, if a supplier's price level is below the market average, salespeople probably rely on lower prices in their argument, and as a consequence, a lower level of customer orientation in sales encounters may be sufficient to achieve a desired outcome In other words, we expect the additional benefits of higher levels of customer orientation in sales encounters to be more substantial if a supplier's prices are above rather than below the market average Thus, we hypothesize the following

> H_9 The optimum level of a salesperson's customer orientation in sales encounters with regard to sales performance is higher if a supplier's price positioning is above rather than below the market average

Competitive intensity Finally, we expect that the optimum level of customer orientation in sales encounters is higher in highly competitive markets than in less competitive markets In highly competitive environments, customers have greater relative market power (Appiah-Adu and Singh 1998) Accordingly, customers most likely have greater demands in highly competitive markets, for example, with regard to product quality and service levels Moreover, in highly competitive markets, the quality of products and services of different suppliers is often similar, thus complicating differentiation

As a consequence, in highly competitive environments, salespeople are pressured to be a means of differentiation—for example, by establishing a relationship with the customer that is perceived as valuable in itself (Yim, Tse, and Chan 2008) Therefore, we expect that high levels of a salesperson's customer orientation in the single stages of a sales encounter are more beneficial if competitive intensity is high If competitive intensity is low and salespeople can more easily differentiate from competition, for example, in terms of the quality of a supplier's products and services, a lower level of a salesperson's customer orientation in sales encounters is likely to be sufficient Against this background, we hypothesize the following

> H_{10} The optimum level of a salesperson's customer orientation in sales encounters with regard to sales performance is higher in highly competitive markets than in less competitive markets

Methodology

Collection of Triadic Data

To test these hypotheses, we conducted a large survey among sales managers, sales representatives, and customers In the first step, we asked chief executives who cooperate regularly with the University of Mannheim whether they were interested in participating In this way, 47 companies from different industries were contacted As incentives, they were offered an individualized report of the study results (including benchmark analyses) and a consulting workshop Of these companies, 12 that mainly operate in business-to-business markets in six different industries (financial services, logistics, health care, machine building, chemicals, and information technology) agreed to participate (a response rate of 25 6%), most with multiple business units Overall, 33 business units participated.

In these business units, we conducted two separate surveys among the sales managers and the sales representatives After informing them about the goals of our research, we mailed questionnaires with a request for completion within four weeks We obtained usable responses from 56 sales managers (a response rate of 84 9%) and 195 sales representatives (67 2%)

In the second step, we obtained the contact data of, on average, ten randomly selected customers per participating sales representative, which allowed us to survey multiple customers per sales representative After informing these customers by mail about the goals of the study, we contacted them by telephone to obtain their responses to our survey questions, which resulted in usable responses from 538 customers Table 2 presents the respondents' characteristics

Data from the three sources were matched using code numbers Because the unit of analysis in this study is the individual salesperson, we matched the data at the sales-

TABLE 2
Sample Composition

	%
A. Industries According to Salespeople Surveyed	
Financial services	32
Logistics	22
Health care	14
Machine building	2
Chemicals	17
Information technology	13
B. Sales Experience of Salespeople Surveyed	
<5 years	14
5–10 years	31
11–15 years	21
16–20 years	19
21–25 years	5
26–30 years	5
>30 years	5
C. Number of Customers Served by Salespeople	
1–10	20
11–20	16
21–50	22
51–100	17
>100	25
D. Length of Relationship Between Supplier and Customer	
<2 years	5
2–5 years	8
6–10 years	11
11–20 years	26
21–30 years	16
31–50 years	20
>50 years	14

person level by averaging customer responses for each salesperson Aggregation may be problematic if there is high variance in judgments related to the same salesperson, thus, we computed the $r_{wg(J)}$ index (James, Demaree, and Wolf 1984) for the customer constructs The $r_{wg(J)}$ values for the three focal constructs (i e , attitude toward the salesperson, attitude toward a supplier's products, and customer satisfaction) are all above 89, indicating strong consistency (Brown and Hauenstein 2005) As a result, aggregating the customer responses for each salesperson is a viable strategy

Measure Development

For item generation, we modified existing scales, only a few items were completely new We further refined the measures on the basis of an intensive pretest A complete list of items (including the new and original wording) appears in the Appendix

As in previous research (Franke and Park 2006), we assessed salesperson customer orientation in sales encounters using salesperson self-reports (instead of customer assessments) Given the study objectives, this is adequate because aspects related to costs of customer orientation (e g , the degree to which an offer is customized) often cannot be easily observed by customers

In general, items come from two sources First, we modified items from Saxe and Weitz's (1982) original scale to match the specific context of sales encounters Second, we based the items on existing scales that measure specific behaviors relevant for the respective stage of the sales encounter More specifically, to measure identification of customer requirements, we combined two items from Saxe and Weitz's scale with three items referring to effective listening behaviors (Castleberry, Shepherd, and Ridnour 1999) With regard to presentation of customer solutions, again we combined one item from Saxe and Weitz's scale with items referring to customer-oriented techniques in sales presentations (Dwyer, Hill, and Martin 2000) To measure collaborative handling of objections and disagreements, we combined two new items with Rahim's (1983) scale for measuring collaborative handling of conflicts Similarly, we combined two modified items from Rahim's (1983) compromising scale with one item from Saxe and Weitz's customer orientation scale to measure consideration of customer interests The two items for measuring the use of informative closing techniques are specifications of a broader item from Saxe and Weitz's scale

In line with Oliver and Anderson (1994), the participating salespeople rated their sales performance relative to that of their colleagues regarding orders, sales, and contribution margin Thus, in line with recent sales research (e g , Wieseke et al 2009), we assessed performance using subjective (vs objective) self-report (vs supervisor-rated) measures

We used a subjective (vs objective) sales performance measure because otherwise the performance between salespeople from different companies could not be compared (Behrman and Perreault 1982) In addition, empirical evidence shows that subjective measures "do a better job of tapping the content domain of the performance construct" (Rich et al 1999, p 52)

We used a self-report (vs supervisor-rated) sales performance measure because, to maintain employee trust, many firms did not allow their managers to share individual performance information Moreover, it is likely that these self-report measures are valid for at least three reasons First, supervisor performance ratings may be biased by supervisors' perceptions of the salesperson's organizational citizenship behaviors, such as whether he or she spends a lot of time complaining (MacKenzie, Podsakoff, and Fetter 1993) Second, previous research on the performance outcomes of customer orientation yields consistent results with regard to self-reported and supervisor-rated performance (Brown et al 2002) Third, a series of tests, which we describe in the "Results" section, establishes that our findings are not due to common method variance (CMV)

Using evaluations from the participating customers, we measured a customer's attitude toward the salesperson with three items adapted from a related scale employed by Ramsey and Sohi (1997) Likewise, we measured a customer's attitude toward a supplier's products with three modified items from a scale used by Miyazaki, Grewal and Goodstein (2005) Finally, we measured customer satisfaction with four items from Homburg and Stock (2004)

We include two control variables in the model We modeled salesperson experience (measured as the number of years the salesperson has worked in sales) as an antecedent of sales performance Quality of services and customer-related business processes is linked to the customer attitude constructs We measured it using two items from Homburg and Stock (2004)

We measured the moderator variables with sales manager assessments To measure product individuality, managers assessed four new items that asked them to evaluate the individuality of typical products their business unit sells Furthermore, we measured product importance with two items adapted from Porter, Wiener, and Frankwick (2003) and competitive intensity with five items adapted from Jaworski and Kohli (1993) Finally, we assessed the overall price positioning of managers' business units compared with their competitors with a single item because it refers to a concrete and singular concept (Bergkvist and Rossiter 2007)

Measure Assessment

We assessed reliability and validity of the measures with confirmatory factor analyses for each factor This included a higher-order factor analysis (Brown 2006), with customer orientation in sales encounters as the second-order construct and its five dimensions as the first-order constructs Thus, equivalent to item reliabilities, we can compute the percentage of variance of the five dimensions explained with the underlying customer orientation construct

Overall, the measures exhibit good psychometric properties All constructs exhibit composite reliabilities well above the recommended threshold of 70 (see Table 3) For both customer orientation and its outcomes, item loadings (as well as the coefficients linking customer orientation to its five dimensions) are all positive, high in magnitude, and statistically significant, indicating unidimensionality and establishing convergent validity (Anderson 1987)

TABLE 3
Correlations and Measurement Information

Variable	M	SD	CR	AVE	1	2	3
1 Customer orientation in sales encounters (SP)	5 83	55	88	60	1 00		
2 Sales performance (SP)	4 96	93	88	71	31	1 00	
3 Customer's attitude toward the salesperson (C)	6 13	98	93	81	23	30	1 0
4 Customer's attitude toward a supplier's products (C)	5 33	94	85	59	25	09	3
5 Customer satisfaction (C)	5 67	96	94	78	07	32	5
6 Salesperson experience (SP)	13 30	8 36	N A	N A	– 02	30	0
7 Quality of services and customer-related business processes (C)	4 89	61	71	56	– 13	26	3

Notes SP = salesperson data, and C = customer data N A = not applicable because the construct is measured through a single indicator, a
variance extracted (AVE) cannot be computed

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In addition, most item reliabilities are above the recommended value of 40 (Bagozzi and Baumgartner 1994, see the Appendix) The most important exception is the consideration of customer interests dimension of customer orientation with a value of 37, which we kept in the model to preserve conceptual comprehensiveness The few other exceptions are for items of the five dimensions of customer orientation Again, deviations from 40 are rather small Following suggestions to prioritize conceptual concerns in indicator selection (vs maximizing internal consistency), we kept these items in the model (e g , Little, Lindenberger, and Nesselroade 1999)

It is also important to assess whether the outcomes of customer orientation represent clearly distinguishable phenomena According to Fornell and Larcker (1981), any pair of constructs exhibits discriminant validity if the average item variance extracted through both constructs is higher than their contribution to explaining the other construct (assessed with squared correlations) In a confirmatory factor analysis model with all constructs, the outcomes of customer orientation meet this criterion (as well as the remaining constructs) In addition, the fit of the confirmatory factor analysis model containing all constructs is satisfactory (χ^2/d f = 1 58, comparative fit index = 94, and root mean square error of approximation = 07)

Results

Results Related to Main Effects

We employed structural equation modeling (SEM) to test our hypothesized main effects (H_1–H_6) using Mplus 4 2 (Muthén and Muthén 2006) To keep the number of parameters in the model at a manageable level while preserving the multifaceted nature of the customer orientation construct, we measured it through item parcels (Bagozzi and Edwards 1998), that is, the averages of the items for each dimension serve as five indicators of customer orientation in sales encounters

To analyze the potential nonlinear, inverted U-shaped effect of a salesperson's customer orientation on sales performance (H_1), we included the square of customer orientation ($\xi_1 \times \xi_1$) in our model Using the unconstrained model specification that Marsh, Wen, and Hau (2006) propose, to measure the quadratic term, we squared the five indicators of customer orientation We mean-centered all indicators before creating the product indicators to enable model convergence (e g , Lee, Song, and Poon 2004), while facilitating the interpretation of the path coefficients (e g , Cohen et al 2003) without altering the form of the relationship (Echambadi and Hess 2007) With mean-centered data, the linear coefficient captures the relationship between customer orientation and the dependent variables at the mean level of customer orientation

As in regression, H_1 is supported if $\gamma_{41 \times 1}$ linking the latent quadratic term $\xi_1 \times \xi_1$ to sales performance (η_4) is statistically significant and negative, indicating a curvilinear, inverted U-shaped effect We also link the quadratic term to customer attitudes Here, nonsignificant path coefficients can be viewed as support that (as we predicted in H_2 and H_3) the relationship between these constructs is indeed continuously positive (Cohen et al 2003)

With regard to model fit, the ratio of chi-square value to degrees of freedom (1 69) indicates good fit (Kline 2004), the comparative fit index (90) suggests acceptable fit (Bentler and Bonett 1980, Kline 2004), and the root mean square error of approximation (07) is a sign of reasonable fit (Browne and Cudeck 1993) Overall, the model fits the data satisfactorily Figure 3 shows the parameter estimates

Consistent with H_1, the quadratic term of customer orientation has a negative impact on sales performance ($\gamma_{41 \times 1} = -28, p < 05$), while the effect of the linear term is positive ($\gamma_{41} = 21, p < 05$) Thus, the overall effect is nonlinear in the shape of an inverted U, and there is an optimum level of salesperson customer orientation The positive coefficient of the linear term implies that at the average level of customer orientation, its effect is still positive

We also find empirical support for H_2 and H_3 More specifically, the linear term of customer orientation has a positive impact on a customer's attitude toward the salesperson ($\gamma_{11} = 24, p < 01$) and a customer's attitude toward a supplier's products ($\gamma_{21} = 26, p < 01$) At the same time, the effects of the quadratic term of customer orientation on customer attitudes are not significant ($\gamma_{11 \times 1} = -10, p > 10$, $\gamma_{21 \times 1} = -02, p > 10$) Thus, a salesperson's customer orientation in sales encounters has a continuously positive effect on customer attitudes

Consistent with H_4, H_5, and H_6, a customer's attitude toward the salesperson ($\beta_{31} = 22, p < 01$) and a customer's attitude toward a supplier's products ($\beta_{32} = 45, p < 01$) influence customer satisfaction In turn, this positively affects sales performance ($\beta_{43} = 24, p < 01$)

Results Related to Moderating Effects

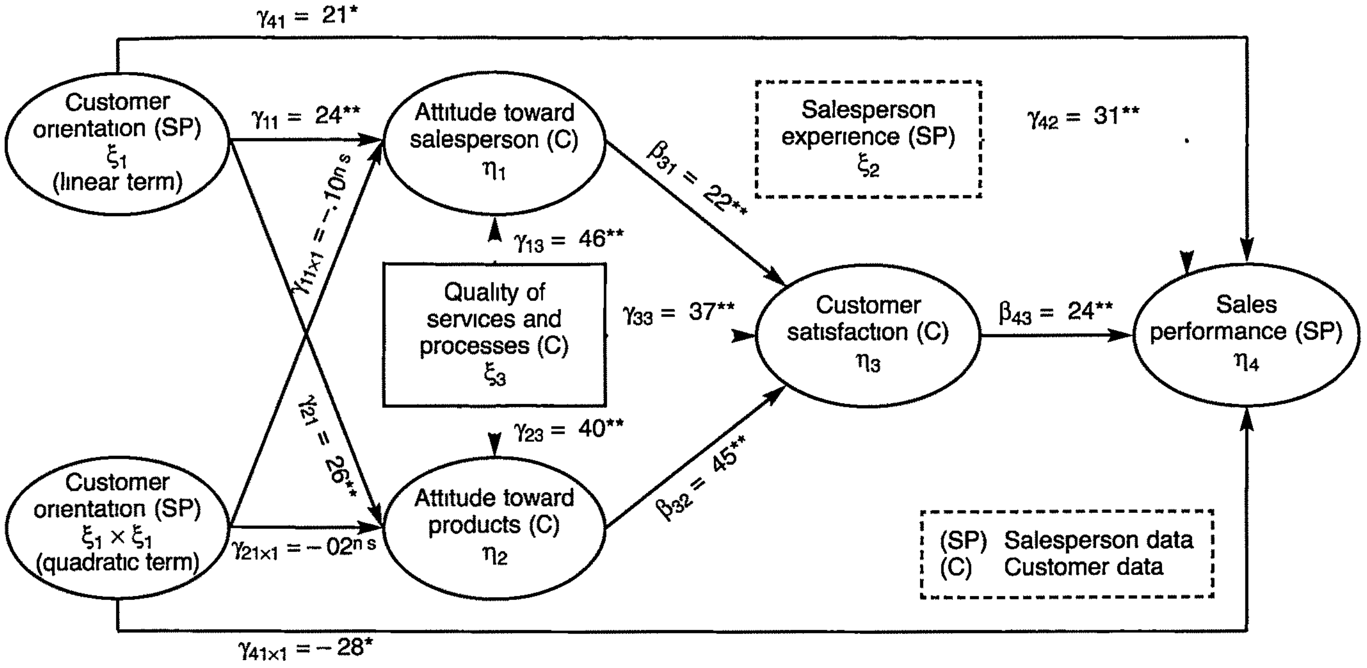
H_7–H_{10} predict that contextual variables influence the optimum level of salesperson customer orientation To test these hypotheses, we rely on multigroup regression First, we determined the optimum level of customer orientation across the entire sample In line with the matching structural equation in the SEM model (see Figure 3), we regressed sales performance (SPERF) on the linear (CO) and quadratic (CO^2) terms of a salesperson's customer orientation, on customer satisfaction (CS), and on sales experience (EXP)

$$(1) \qquad SPERF = \alpha + \beta_1 \times CO + \beta_2 \times (CO)^2 + \beta_3 \times CS + \beta_4 \times EXP + \varepsilon$$

Using ordinary least squares estimates for this model, we can compute the optimum level of salesperson customer orientation in sales encounters (CO_{opt}) based on the first derivation of the regression equation as $[\beta_1/(-2 \times \beta_2) = (26/(-2 \times -35) = 37]$ These values are based on the mean-centered variables, a transformation back to the original scale from 1 to 7 results in an optimum level $CO_{opt} = 6\ 20$

On the basis of median splits, for each moderator we created subsamples with low values and high values of the moderator For every moderator, we then estimated the model from Equation 1 in both subsamples It was then possible to compare the optimal levels of customer orientation

FIGURE 3
Results of Model Estimation



γ_{41} = 21*
Customer orientation (SP) ξ_1 (linear term)
γ_{11} = 24**
Attitude toward salesperson (C) η_1
$\gamma_{11\times1}$ = −.10n s
β_{31} = 22**
Salesperson experience (SP) ξ_2
γ_{42} = 31**
γ_{13} = 46**
Quality of services and processes (C) ξ_3
γ_{33} = 37**
Customer satisfaction (C) η_3
β_{43} = 24**
Sales performance (SP) η_4
γ_{21} = 26**
γ_{23} = 40**
Customer orientation (SP) $\xi_1 \times \xi_1$ (quadratic term)
$\gamma_{21\times1}$ = −02n s
Attitude toward products (C) η_2
β_{32} = 45**
(SP) Salesperson data
(C) Customer data
$\gamma_{41\times1}$ = −28*

*$p <$ 05
**$p <$ 01
Notes Completely standardized coefficients are shown n s = not significant The continuous lines indicate the effects of the major variables, and the dotted lines indicate the effects of control variables used in the model

for low and high levels of the contextual variable Table 4 presents the results

Table 4 shows that for each moderator, optimum levels of customer orientation differ strongly between groups To test whether these differences are statistically significant, we first used a Chow test to test the null hypothesis H_0 $B^{low} = B^{high}$ (i e , the equality of the vector of regression coefficients B^{low} in the group with low values of the contextual variable and the corresponding vector of the high-values group B^{high}) As Table 4 shows, the Chow F-statistic is highly significant for all moderators Thus, regression coefficients differ significantly between subgroups, which indicates that the optimum levels of customer orientation differ as well

Second, using a Wald test (Muthén and Muthén 2006), we tested more specific constraints, that is, we forced the optimum level CO_{opt}^{low} of salesperson customer orientation in the low-values group of the moderator to be equal to the optimum level CO_{opt}^{high} in the high-values group (H_0 $CO_{opt}^{low} = CO_{opt}^{high}$) Table 4 shows the resulting chi-square test statistics They are significant for all contextual variables, except product importance In summary, these

TABLE 4
Impact of Moderator Variables on the Optimum Level of a Salesperson's Customer Orientation in Sales Encounters

	Moderator Variables							
	Product Importance		Product Individuality		Supplier's Price Positioning		Competitive Intensity	
Parameters	Low	High	Low	High	Low	High	Low	High
Optimum level of a salesperson's customer orientation in sales encounters^a	25	1 25	13	2 52	18	1 63	22	1 99
Chow statistic	3 42		4 91		4 47		3 47	
p-value	01		00		00		01	
Wald statistic	2 13		6 59		5 95		4 13	
p-value	14		01		01		04	

^{a}Based on unstandardized coefficients for mean-centered variables analyses provide strong empirical support for H_8, H_9, and H_{10}, while H_7 is only partially supported.

Robustness Checks

Nested data. The data in this study are hierarchical in nature. Salespeople (the unit of analysis) are nested in sales units (represented by the 56 sales managers), which are nested in business units, which are nested in firms. Ignoring these dependencies may result in misleading statistical conclusions. Therefore, we also tested H_1 using the following model:

$$(2)\ SPERF_{ijkl} = \alpha_{jkl} + \beta_{1jkl}CO + \beta_{2jkl}CO^2 + \beta_{3jkl}CS + \beta_{4jkl}EXP.$$

This model takes the sample structure explicitly into account. Here, the sales performance (SPERF) of salesperson i in sales unit j, business unit k, and firm l is explained through customer orientation (CO), the square of customer orientation (CO^2), customer satisfaction (CS), and salesperson experience (EXP). As the subscripts indicate, this model is specified as a random coefficient model (i.e., we allow the parameters to vary across all subgroups in the sample). Hierarchical linear modeling results regarding the average effects provide additional support for H_1 because they replicate the SEM results ($\beta_{1jkl} = .16$, $p < .05$, $\beta_{2jkl} = -.37$, $p < .05$). In addition, in random coefficient models, parameters are estimated for every subgroup. Consistent with H_1, in all firms, business units, or sales units studied, the resulting regression coefficients show that the relationship between customer orientation and sales performance takes an inverted U shape.

Common method bias. We measure both customer orientation and sales performance using salesperson self-reports. Thus, CMV may bias the findings regarding H_1 (Podsakoff et al. 2003). Although this risk is reduced because H_1 is nonlinear, which implies that the relationship between both constructs has a different form in different subgroups of the sample, we conducted three tests to rule out the possibility of common method bias.

First, we employed a Harman single factor test (Podsakoff et al. 2003) to determine whether a single factor would account for a large part of the variance of all manifest variables based on salesperson self-reports. The single factor model yielded a chi-square of 226.1 (d.f. = 27), and a model in which we specified all relevant constructs individually leads to a significant improvement in fit ($\Delta\chi^2$(d.f. = 2) = 171.8, $p < .01$). This suggests that CMV is not a serious threat.

Second, we included a common method factor in the structural model used to test H_1. It loads on all items based on salesperson self-reports and thus controls for CMV in hypothesis testing. To achieve model convergence (Rindfleisch et al. 2008), we specified all loadings of the method factor as being of the same size, reflecting the assumption that CMV affects all items equally. In addition, we specified the method factor as being uncorrelated with other constructs, reflecting the assumption that the degree of CMV is independent of the true magnitude of customer orientation and/or sales performance. The results regarding H_1 are stable after we include the method factor, which also suggests that CMV does not bias the results.

Third, we replicated the nonlinear effect of customer orientation using managerial performance information at the sales unit level. We regressed unit sales (reported by the managers) on the average customer orientation in the sales unit. Again, consistent with H_1, the square of customer orientation negatively affects sales ($\gamma_{41 \times 1} = -.320$). The effect is only significant at the 10% level, but this seems acceptable given the small sample. Thus, H_1 is supported using data from multiple sources, again suggesting that CMV is not a major threat.

Additional Analyses of Costs and Benefits of Customer Orientation in Sales Encounters

The argument behind our focal nonlinear hypothesis (H_1) is based on two key propositions. First, the benefits of increasing customer orientation follow the principle of diminishing returns, and second, increasing customer orientation is costly. The preceding sections tested the general implication of these ideas, that is, the existence of an inverted U-shaped relationship between customer orientation and sales performance. This section more closely examines some data regarding these two propositions. However, the analyses we describe here can only be considered tentative because we designed the empirical study with the model in Figure 3 in mind.

Diminishing benefits of customer orientation in sales encounters. Table 5 shows the results from a nonlinear multilevel regression analysis that we designed to test whether the principle of diminishing returns applies to the benefits of customer orientation. We analyzed three models in which the square root of customer orientation (reflecting diminishing returns) acted as an antecedent to customer intentions to buy more, customer price insensitivity, and customer positive word of mouth. In all models, we specified customers as being nested in salespeople (using hierarchical linear modeling) and included several control variables pertaining to relationship characteristics.

The square root of customer orientation is linked to all three outcomes, though the effect on intentions to buy more is only significant at the 10% level. In addition, Akaike information criterion and Bayesian information criterion both indicate that the nonlinear model is a better approximation to the data than its linear equivalent in all three cases. Thus, these results confirm the idea that with increasing levels of salesperson customer orientation, the incremental benefits of further increases become smaller.

Costs of customer orientation in sales encounters. To examine the possible costs of customer orientation, we used data on the customer structure and time use of the participating salespeople. Table 6 lists the mean vales of these variables for five salesperson groups, which we created through a quintile split along the values of the customer orientation construct.

Coincidentally, the mean customer orientation of Group 4 equals almost exactly the optimum level of customer orientation we derived previously. Thus, Group 5 with even higher values represents salespeople who are too customer oriented according to our results. As we argued in the reasoning behind H_1, to maintain a very high level of customer orientation, salespeople must spend more time with the cus-

TABLE 5

Results of Multilevel Regression to Assess Diminishing Returns of Salesperson Customer Orientation in Sales Encounters

Independent Variables	Intention to Buy More[a]	Price Insensitivity[b]	Positive WOM[c]
	Dependent Variables (Customer Data)		
Customer Orientation (Salesperson Data)			
Square root of customer orientation	1 01*	60**	1 53**
Control Variable (Salesperson Data)			
Salesperson experience	– 00	– 00	02
Control Variables (Customer Data)			
Costs of changing the supplier[d]	08***	00	11***
Size of customer firm[e]	– 05	– 09***	– 10**
Number of alternative suppliers	27**	– 07*	09
Length of firm relationship with supplier	– 00	– 00*	– 01
Length of respondent relationship with salesperson	00	01	07**

$^{*}p \leq 10$

$^{**}p \leq 05$

$^{***}p \leq 01$

[a] Measured through two Likert-scaled items (α = 75) asking customers to state their plans to expand the business relationship with the supplier

[b] Measured through a single item (five-point scale) asking customers to state how much lower competitor prices would need to be (in percentage of the current price of the supplier) to make them change the supplier

[c] Measured through two Likert-scaled items (α = 83) referring to positive word-of-mouth (WOM) behavior

[d] Measured through four Likert-scaled items (α = 65) referring to four different aspects of costs for changing the supplier (contractual obligations, individualized products, specific investments, and costs for ending the relationship)

[e] Measured with closed-ended question (12-point scale) asking for the revenues of the customer firm

Notes Unstandardized coefficients are shown

tomers they serve, which requires them to serve fewer customers in total. In line with this reasoning, the salespeople in Group 5 serve the fewest customers in terms of absolute number of customers and rank fourth in terms of the relative number of customers At the same time, these salespeople have more purely informative customer interactions (i e , without any sales element) than any other group Thus, Table 6 provides some evidence that very high levels of customer orientation may be too costly in terms of how salespeople allocate their time within and across customer relationships

Discussion

Customer-oriented salesperson behaviors are important for building lasting buyer–seller relationships At the same time, implementing a customer orientation requires time and increases complexity for the selling organization Taken together with the lack of evidence in support of a positive effect of customer orientation on salesperson performance (Franke and Park 2006), the question arises whether an optimal level of customer orientation exists and what factors determine its magnitude Using survey data from 195 salespeople, 56 sales managers, and more than 500 customers, this study addresses this issue It has implications for researchers and managers

Research Issues

First, in his review of the salesperson customer orientation literature, Schwepker (2003, p 166) concludes that "research is needed to fully uncover the dimensions underlying customer-oriented selling" This study addresses this issue by

TABLE 6

Descriptive Analysis of Costs of Salesperson Customer Orientation in Sales Encounters

Variable	Lowest (n = 38)	Low (n = 39)	High (n = 38)	Optimal (n = 40)	Too High (n = 38)
	Salesperson Customer Orientation in Sales Encounters				
Customer orientation	5 13	5 64	5 90	6 21	6 68
Sales performance	4 67	4 86	5 05	5 36	5 21
Number of customers served[a]	104	86	117	111	67
Number of customers served/ sales unit average[b]	91	95	1 03	1 16	95
Percentage of purely informative customer interactions[a]	50 45	50 52	47 83	49 95	54 81
Percentage of customer interactions with sales elements[a]	49 55	49 48	52 13	50 05	45 19

[a] Measured with open-ended question

[b] Average number of customers served calculated from responses from all participating salespeople in a sales unit

acknowledging the multidimensional nature of the construct (Stock and Hoyer 2005) We conceptualize salesperson customer orientation with five dimensions, each corresponding to behaviors in one of the five stages of a sales encounter

It is worth noting that this conceptualization explicitly refers to salesperson conflict management behaviors (e g , collaborative handling of disagreements) Thus, this study provides evidence that salesperson customer orientation cannot be reduced to being "simply a sales presentation approach," which previous scales have implied (Schwepker 2003, p 165) At the same time, our construct does not comprise behaviors that aim to establish a personal relationship with the customer, such as getting to know a customer personally (Donavan, Brown, and Mowen 2004) Thus, further research could analyze whether our more functional understanding of customer orientation and our results are related to these purely relational aspects of customer orientation

Second, this study explicitly takes a nonlinear perspective on studying performance outcomes of customer orientation In particular, we find a curvilinear, inverted U-shaped relationship between both constructs Thus, we provide evidence that there is an optimum level of customer orientation in sales encounters with regard to sales performance Although some scholars might find this result to be consistent with their intuition, it severely contradicts scholarly and managerial practice For example, to the best of our knowledge, none of the studies Franke and Park (2006) use in their comprehensive meta-analysis on outcomes of salesperson customer orientation test nonlinear effects However, it is not just the salesperson customer orientation literature that limits itself to "the-more-the-better" perspective For example, we also find this approach in recent studies on relational selling (e g , Palmatier, Scheer, and Steenkamp 2007, Yim, Tse, and Chan 2008) According to our study, it is advisable that researchers in these fields routinely consider nonlinear relationships between key phenomena

Against this backdrop, we emphasize that in this study, we do not address *why* salespeople exhibit higher-than-optimal levels of customer orientation Perhaps salespeople underestimate the costs of customer orientation (Franke and Park 2006), or they experience difficulties in identifying the appropriate time horizon in a business relationship (e g , Ganesan 1994) and thus focus too much on securing long-term outcomes Finally, another possible reason could be an exaggerated commitment to the customer (e g , Siders, George, and Dharwadkar 2001), perhaps because of a personal friendship between the customer and the salesperson (Grayson 2007, Heide and Wathne 2006) Additional research could examine this issue more closely For example, it would be important to better understand how salesperson commitment to specific customers influences decisions in the selling process (e g , regarding price concessions)

Third, there is some discussion in the sales literature whether financial sales performance is the best performance measure in relational selling contexts Scholars have argued that financial sales performance might not adequately account for more long-term customer reactions (e g , Hunter and Perrault 2007) At the same time, firms adopting a customer-focused sales campaign still refer to the bottom line to judge the results (e g , Kumar, Venkatesan, and Reinartz 2008) Therefore, in this study, we consider two outcomes simultaneously financial sales performance and customer attitudes The results show that customer orientation affects these outcomes differently That is, it has a nonlinear effect on sales performance, while the effect on customer attitudes is continuously positive This also provides an integrating explanation to the mixed findings of previous research, in which customer orientation is consistently found to affect customer attitudes (e g , Brady and Cronin 2001, Goff et al 1997), and (linear) effects on sales performance are small at best (Franke and Park 2006)

Fourth, this study responds to calls to identify the influence of moderator variables on the effectiveness of salesperson customer orientation (Franke and Park 2006) The optimum level of customer orientation in sales encounters is substantially higher with individualized products, in competitive environments, and for supplier firms that have adopted a premium price strategy

These findings allow for an integration of diverging findings on salesperson customer orientation For example, the effect of product individuality explains why Howe, Hoffman, and Hardigree (1994) do not find an effect of salesperson customer orientation on performance in insurance companies, but in a real estate context, McIntyre et al (2000) do

Managerial Implications

As a first important managerial implication of this study, we urge practitioners to reconsider the link between salesperson customer orientation and sales performance In particular, while in this era of relational selling many salespeople ask themselves, "How right should the customer be?" they often only get an answer of the type, "The customer is always right" As Price (2009) recently observed, "Perhaps the most often stated value of corporate leaders is some variant of 'We put customers first'" Consider also the advice in *Marketing Week* (Choueke 2009, p 3) to "Put the customer first, then success will follow" or the recommendation of former Orange chief executive officer Hans Snook to "make sure that everybody in the company understands the customer is king" (Tomkins 2005, p 13) We find that this widely held belief is only partially true because there is an optimum level with regard to customer-oriented behaviors in sales encounters Thus, there are times when the customer should not be king

This finding is especially important in the ongoing economic crisis, in which many sales managers are searching for ways to reduce costs while maintaining performance Here, reducing the customer orientation of salespeople who are "too customer oriented" promises to be a viable strategy In this context, it is worth emphasizing that the number of salespeople with customer orientation levels beyond the optimum may be quite high For example, in our sample, approximately 30% of the salespeople exhibit customer orientation levels higher than the optimum of 6 20

It is necessary to point out that reducing salesperson customer orientation is not a straightforward endeavor (Homburg, Droll, and Totzek 2008) In particular, as customers exhibit loss aversion, negative reactions to decreases in perceived service levels are likely to be stronger than the positive reactions to increases they experienced previously Thus, we advise practitioners to "soften the blow" of reducing salesperson customer orientation For example, Kumar, Venkatesan, and Reinartz (2008) find that improving the timelines of sales calls can be an effective way to maintain perceived customer orientation levels while reducing the costs of serving individual accounts

Another word of caution is required In our sample, 70% of the salespeople have customer orientation levels that are optimal or lower Thus, our study cannot be considered an invitation to simply renounce salesperson customer orientation as a whole For many salespeople, encouraging customer-oriented behaviors is still more the issue than discouraging them

In this context, a second important managerial implication of this study is to monitor individual salesperson customer orientation more closely This study provides managers with a new scale to assess salesperson customer orientation In addition, the optimum level of customer orientation from this sample (6 20) can serve as a benchmark If salespeople score consistently higher than 6 on this scale, managers could use this as a potential warning signal that their behaviors may be potentially counterproductive From our descriptive analysis regarding the costs of customer orientation, we identify two additional warning signals First, salespeople who are too customer oriented in our sample serve the fewest customers in absolute numbers Second, salespeople who are too customer oriented address sales-related issues in less than 50% of their customer interactions Particularly when combined with a salesperson's customer orientation score, managers can use these indicators as additional warning signs for problematic levels of salesperson customer orientation

A third important managerial implication from this research is that for firms offering a broad product portfolio in heterogeneous markets, a one-size-fits-all approach to salesperson–customer interactions and sales force control systems leads to a substantial misallocation of resources In particular, the results suggest that customer orientation contributes more strongly to sales performance in some market environments and less in others Thus, we advise managers to develop different customer interaction models depending on the characteristics of the product and its specific market For example, in business units offering individualized products at a premium price in highly competitive environments, the optimum level of a salesperson is very high In such a context, sales force control systems should consist mostly of outcome controls, which are likely to strengthen salesperson focus on the customer (Anderson and Onyemah 2006) At the same time, in business units offering mostly standardized products in marketplaces with little competition, sales force control systems should focus on behavioral controls (e g , a maximum number of follow-up calls with respect to a specific customer) to strengthen the firm focus of the salespeople

Limitations

At least four limitations of this study should be considered, they also provide avenues for further research First, the multidimensional measurement model for salesperson customer orientation reveals that most items and dimensions have good psychometric properties However, only 37% of the variance of the consideration of customer interests dimension is explained with the customer orientation construct In addition, the properties of the items of the dimension "Use of informative closing techniques" are not entirely satisfactory

Second, the overarching theme behind our prediction of a nonlinear effect of customer orientation on sales performance is that the law of diminishing returns applies to the benefits of customer orientation, whereas the costs of customer orientation increase steadily Although we describe several additional analyses that provide some evidence for this reasoning, the data collected for this study do not allow us to test these ideas fully Thus, further research is necessary to better understand the mechanisms linking customer-oriented behaviors to performance

Third, most of the buyer–supplier relationships covered in our sample were rather old, with less than 25% lasting for ten years or less However, the effectiveness of salesperson customer orientation might also depend on the specific stage of the buyer–seller relationship For example, customer-oriented behaviors could be more effective in earlier stages of a relationship with the customer Unfortunately, hypotheses of this kind cannot be effectively studied using our data

Fourth, this study relies on data from a cross-sectional survey This limits our ability to make causal inferences Most important, because all our variables are measured at the same time, we do not completely cover the long-term effects of salesperson customer orientation In particular, customer attitudes may affect sales performance more strongly in the long run Therefore, further research could complement this study by analyzing its focal hypotheses using longitudinal data (Rindfleisch et al 2008)

APPENDIX
Scale Items for Construct Measurement

Item Used in Study	Item Reliability[a]	Original Item	Source
1. Customer Orientation in Sales Encounters			
•Identification of customer requirements	78[b]	N A	N A
•Presentation of customer solutions	82[b]	N A	N A
•Solution-oriented handling of objections and disagreements	62[b]	N A	N A
•Consideration of customer interests	37[b]	N A	N A
•Use of informative closing techniques	46[b]	N A	N A

APPENDIX
Continued

Item Used in Study	Item Reliability[a]	Original Item	Source
2. Facets of a Salesperson's Customer Orientation in Sales Encounters			
Identification of Customer Requirements (Salespeople) seven-point scale "totally disagree" to "strongly agree"			
•I ask my customers about their specific performance requirements	42	"I try to figure out what a customer's needs are "	Saxe and Weitz (1982)
•I ask directed questions to determine the specific needs of my customers	58	"I ask probing questions "	Castleberry, Shepherd, and Ridnour (1999)
•I actively involve my customers in meetings to determine their specific needs	69	"I try to get customers to discuss their needs with me "	Saxe and Weitz (1982)
•I attentively listen to my customers to get a proper understanding of their specific needs	63	"I make an effort to understand the buyer's point of view "	Castleberry, Shepherd, and Ridnour (1999)
•I summarize my customers' statements to get a proper understanding of their specific needs	36	"I summarize what the buyer has said "	Castleberry, Shepherd, and Ridnour (1999)
Presentation of Customer Solutions (Salespeople) seven-point scale "totally disagree" to "strongly agree"			
•I particularly focus on functional information which is especially relevant for my customers	41	"Make a sales presentation that is customized or specifically tailored to each prospect "	Dwyer, Hill, and Martin (2000)
•I focus on those benefits of our products and services which are of particular relevance for my customers	48	"Focus the sales talk on the product and the benefits it offers "	Dwyer, Hill, and Martin (2000)
•I adapt my sales pitch very much to my customers' interests	73	"I offer the product of mine that is best suited to the customer's problem "	Saxe and Weitz (1982)
•When presenting our products and services, I respond very individually to my customers' requirements	70	"Make a sales presentation that is customized or specifically tailored to each prospect "	Dwyer, Hill, and Martin (2000)
Collaborative Handling of Objections and Disagreements (Salespeople) seven-point scale "totally disagree" to "strongly agree"			
•I am very attentive to customer objections	36	Newly developed	N A
•I routinely ask my customers for the reasons behind their objections	49	"I try to work with X for a proper understanding of a problem "	Rahim (1983)
•I am very committed to resolve disagreements between my customers and me	60	Newly developed	N A
•I actively create win/win situations to resolve disagreements between my customers and me	40	"I try to work with X to find solutions to a problem that satisfy our expectations "	Rahim (1983)
•I bring all difference between my customers and me out in the open to resolve disagreements	46	"I try to bring all our concerns out in the open so that the issues can be resolved in the best possible way "	Rahim (1983)
Consideration of Customer Interests (Salespeople) seven-point scale "totally disagree" to "strongly agree"			
•In sales negotiations, I extensively account for my customers' interests	30	"A good salesperson has to have the customer's best interest in mind "	Saxe and Weitz (1982)
•I reconcile my interests with my customers' interests to achieve an agreement in sales negotiations	55	"I try to find a middle ground to resolve an impasse "	Rahim (1983)
•I make compromises with my customers to achieve an agreement in sales negotiations	44	"I negotiate with my boss so that a compromise can be reached "	Saxe and Weitz (1982)
Use of Informative Closing Techniques (Salespeople) seven-point scale "totally disagree" to "strongly agree"			
•I recommend my customers products and services that are appropriate from my point of view in a non-obliging way to facilitate their buying decision	49[c]	"I try to influence a customer by information rather than by pressure "	Saxe and Weitz (1982)

APPENDIX
Continued

Item Used in Study	Item Reliability[a]	Original Item	Source
•I summarize for my customers the major benefits of our offer in a non-obliging way to facilitate their buying decision	36[c]	"I try to influence a customer by information rather than by pressure "	Saxe and Weitz (1982)
3. Outcomes of Salespeople's Customer Orientation			
Salesperson Performance (Salespeople) seven-point scale "much worse" to "much better" How do you evaluate your sales performance in comparison with your colleagues, based			
•on the achieved sales in the last 12 months?	79	"Compared with other salespeople working for your company, how would you evaluate your overall performance?"	Oliver and Anderson (1994)
•on the achieved orders in the last 12 months?	80		
•on the achieved total contribution margin in the last 12 months?	55		
Customer's Attitude Toward the Salesperson (Customers) seven-point scale "totally disagree" to "strongly agree"			
•I consider my account manager at company X to be very customer-oriented	60	"In general, I am pretty satisfied with my dealings with this salesperson "	Ramsey and Sohi (1997)
•Overall, I have a very positive opinion about my account manager at company X	96	Newly developed	N A
•Overall, I am very satisfied with my account manager at company X	88	"I am satisfied with the level of service this salesperson has provided "	Ramsey and Sohi (1997)
Customer's Attitude Toward a Supplier's Products (Customers) seven-point scale "totally disagree" to "strongly agree"			
•The products and services of company X are of high quality	69	"This is a high quality product "	Miyazaki, Grewal and Goodstein (2005)
•The products and services of company X extensively meet our requirements	81	Newly developed	N A
•Compared to other suppliers, the products and services of company X are very good	50	"The quality of this product is very good "	Miyazaki, Grewal and Goodstein (2005)
Customer Satisfaction (Customers) seven-point scale "totally disagree" to "strongly agree"			
•We are very pleased with the products and services of company X	61	"We are very pleased with the products and services of company X "	Homburg and Stock (2004)
•We intensively enjoy collaborating with company X	76	"We enjoy collaborating with this company "	Homburg and Stock (2004)
•On an overall basis, our experience with company X has been very positive	85	"On an overall basis, our experience with company X has been very positive "	Homburg and Stock (2004)
•On an overall basis, we are very satisfied with company X	92	"On an overall basis, we are satisfied with this company "	Homburg and Stock (2004)

[a] Squared factor loading indicating the percentage of item variance explained through the underlying construct
[b] Percentage of dimension variance explained through the customer orientation construct in a second-order confirmatory factor analysis
[c] Item reliabilities from model with two factors consideration of customer interests and use of informative closing techniques
[d] Item reliabilities from model with two factors product individuality and product importance
[e] Construct measured through a single indicator, therefore, item reliability cannot be computed
[f] Item reliabilities from model with two factors customer satisfaction and quality of services and business processes
Notes N A = not applicable

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Junhong Chu & Pradeep K. Chintagunta

An Empirical Test of Warranty Theories in the U.S. Computer Server and Automobile Markets

Four theories on the economic rationale for warranty provision have been proposed in the literature: (1) Warranties provide insurance to customers and work as a risk-sharing mechanism, (2) warranties are a sorting mechanism and work as a means for second-degree price discrimination among customers with different risk preferences, (3) warranties work as a signal of product quality to consumers under information asymmetry, and (4) warranties work as an incentive mechanism for firms to reveal and improve product quality. The authors examine the conditions under which each theory would apply and derive testable implications from the data. They then assess whether these theories have empirical support in the U.S. computer server and automobile markets in the context of manufacturer base warranties. The results indicate that in both markets, warranties primarily provide customers with insurance against product failure, and warranties of different durations work as a sorting mechanism across customers with different levels of risk aversion. Warranties are not used to signal product quality or to provide an incentive for manufacturers to reveal or improve product quality.

Keywords: warranties, insurance, sorting, signaling, incentives, second-degree price discrimination, server market, automobile market

A warranty is a promise by the seller to assume specific responsibilities in case the quality or the performance of the purchased item does not conform to its specifications or to the buyer's legitimate contractual expectations (Parisi 2004). Durable goods are often sold in combination with warranties. Laboratory experiments have shown the value of warranties in decision making under risk and uncertainty (Shimp and Bearden 1982). A survey by the U.S. Department of Commerce (1992) reveals that one of every two consumers interviewed used warranties to judge product quality when making a purchase decision.

These examples indicate that buyers value product warranties. However, what are the mechanisms by which a warranty provides value to different parties involved in the warranty contract? Four theories on the economic rationale for warranty provision have been proposed in the literature (for a review, see Emons 1989). First, warranties provide insurance to customers and work as a risk-sharing mechanism between customers and firms (Heal 1976, 1977). Second, warranties are offered as a sorting mechanism across heterogeneous consumers and work as a means for second-degree price discrimination with consumers who self-select into an appropriate warranty plan (Kubo 1986; Matthews and Moore 1987). Third, warranties are used to signal product quality to consumers under information asymmetry (Balachander 2001; Courville and Hausman 1979; Gal-Or 1989; Grossman 1981; Lutz 1989; Spence 1977). Fourth, warranties work as an incentive mechanism for manufacturers to reveal product quality to consumers, improve product quality, or at least not cheat on product quality. This is because a commitment to a long warranty would result in larger warranty costs if the product's true quality were lower than the warranted level (Cooper and Ross 1985; Lutz 1989; Priest 1981).

These theories make different assumptions about firm and consumer behavior and have different predictions on the economic roles of warranties. However, little empirical work has systematically examined the validity of these theories in actual markets. Lutz (1989, p. 252) notes that "more empirical work will be necessary to determine whether warranties serve as signals or as incentives for the production of quality products. . . . The role of warranties will have to be addressed on a market by market basis." The objective of this article is to assess empirically whether the economic roles of warranties in the U.S. computer server and automobile markets are consistent with the different warranty theories. The server market is a business-to-business market with firms and various institutions as main users, and the automobile market is a business-to-consumer market with individuals and households as main buyers. Thus, an empirical assessment of warranty theories in these two markets can help us better understand warranty theories across different types of markets.

There are two types of warranties: base/basic warranties and extended warranties. The key difference between them

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

is that base/basic warranties are bundled with the product and cannot be purchased separately, thus, their prices are not observable Conversely, extended warranties are optional and can be purchased separately at an additional cost to the buyer Base warranties are usually provided by manufacturers, while extended warranties can be provided by manufacturers, retailers/dealers, or independent third parties Automobile and computer server manufacturers offer both types of warranties for their products [1] Studies have shown that manufacturers and retailers/dealers provide extended warranties primarily for risk sharing and sorting purposes (Kelley and Conant 1991), while for manufacturer base warranties, the four economic rationales may apply in principle Therefore, in this article, we consider only manufacturer base warranties We want to determine whether manufacturers use base warranties as insurance, screening, signaling, or incentive mechanisms Base warranties are characterized by several attributes, such as service response time and warranty duration, but the variation across product models is primarily in warranty duration Thus, assessing the various theories on warranties is equivalent to examining the relationships between a product's warranty duration and its other attributes (e g , price, reliability) [2]

A major reason for the scant empirical research on warranties is the lack of appropriate data To investigate these theories, we need data on product warranty duration, quality, price, and other attributes Thus, we collect data on manufacturer base/basic warranties of major server and automobile models sold in the U S market, together with price, product reliability, and key product attributes We find that the major roles of warranties in these markets are to (1) provide customers with insurance against product failure and (2) work as a sorting mechanism for second-degree price discrimination among heterogeneous customers They are not used to signal product quality to customers or to provide an incentive for firms to reveal product quality to customers or improve product quality

The rest of the article proceeds as follows We first review the theoretical literature on the economic roles of warranties and the limited empirical research Then, we describe the data and the observed warranty patterns in the two markets Next, we assess the various economic theories of warranties in each market We conclude with managerial implications

The Economics of Warranties

Rationales for Warranty Provision

There is a large body of literature on the economic rationales for warranty provision Four theories have been proposed for their use insurance, sorting, signaling, and incentive We summarize these theories in Table 1 and describe them subsequently The insurance, signaling, and incentive motives are based on the premise that warranties lower the risk associated with a purchase, the sorting notion is driven by firms' desire to extract consumer surplus

Insurance theory By definition, warranties obligate a manufacturer or seller to compensate the buyer in the event of product failure They are a form of insurance and work as a risk-sharing mechanism between buyers and the seller (Heal 1976, 1977) The key assumption underlying the insurance theory is that buyers are risk averse In the absence of risk aversion, insurance does not play a role, because risk-neutral or risk-loving buyers can simply bear all the risks Whatever the other roles of warranties, the insurance role exists as long as there is a nonzero probability of product failure and buyers are risk averse Therefore, providing insurance to buyers seems to be the most fundamental function of warranties

A direct implication of the insurance rationale for warranty provision is that the degree of risk aversion and the duration of warranty should be positively correlated Therefore, we expect that (1) the same customers will buy longer warranties when product failure increases and reliability decreases, and (2) given a particular product failure rate, more risk-averse customers will buy longer warranties than less risk-averse customers

Sorting theory The sorting theory of warranties examines the use of warranties as a screening mechanism in markets characterized by consumer heterogeneity in quality evaluation and risk attitude (Kubo 1986, Matthews and Moore 1987, Padmanabhan and Rao 1993) This stream of research focuses on mechanism design that can better screen consumers into different warranty contracts according to their "type " It explores how firms design and price a line of products distinguished by different quality (fully observable) and warranty levels to extract the maximum surplus from each consumer type In other words, firms should design a profit-maximizing set of contracts that specify price, quality, and warranty Screening in the context of manufacturer base warranties can occur through a product line that is primarily differentiated on the basis of warranty coverage and price (i e , buyers can self-select into a more expensive product that offers more insurance) Retailers/dealers screen customers through the sale of retailer-backed extended warranties (Kelley and Conant 1991), however, an open question remains, Do manufacturers screen customers on the basis of risk aversion through the design of their product lines? Doing so may be an effective strategy for manufacturers to capture some of the profits from extended warranty sales

The key assumption underlying the sorting theory of warranties is the presence of consumer heterogeneity Con-

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[1] Selling of extended warranties for durable goods, such as consumer electronics, is typically dominated by retailers/dealers because they are an important source of profits (Paulson 2007) However, durable goods manufacturers have stepped up the provision of extended warranties In the automobile market and product markets (e g , servers and personal computers) in which manufacturer direct selling is common, extended warranties are a profitable enterprise for manufacturers For example, Ford and Dell each bring in more than $1 billion a year through the sale of extended warranties (*Warranty Week* 2005a) Dell's extended warranty revenue as a percentage of operating income sales rose from 24% in 2003 to 38% in 2005 (*Warranty Week* 2005b)

[2] Researchers typically use warranty duration as the appropriate metric when testing the signaling role of warranties (e g , Boulding and Kirmani 1993, Priest 1981, Shimp and Bearden 1982, Soberman 2003)

TABLE 1

Summary of Warranty Theories and Empirical Implications in the Computer Server and

				E	
				Server Market	
Theory	Studies	Key Assumptions	Implications	Assumptions Met?	Suppo
Insurance/ risk sharing	Heal 1977	Consumers are risk averse	Degree of risk aversion and warranty duration are positively correlated (1) The same customers buy longer warranties when product reliability decreases, and (2) more risk-averse customers buy longer warranties	Yes	Yes (Ta
Sorting/price discrimination	Kubo 1986, Matthews and Moore 1987	Consumers are heterogeneous in quality evaluation/ risk aversion	1 Menu of warranties for similar or differentiated products 2 Firms of same size buy different warranties 3 Households of same demographics buy different warranties	Yes	Yes, all manufac offer non warranties 4 and
Signaling	Spence 1977	Information asymmetry	Quality and warranties are positively correlated	Unclear	No, warra quality are related (T
Incentive	Heal 1977, Lutz 1989, Priest 1981	Risk endogeneity	1 Quality is negatively correlated with current warranty 2 Quality is positively correlated with past warranties	Unclear	No, qualit correlate current or warranty c (Tables 9

sumers differ in their evaluation of a product's quality, in their levels of risk aversion, or along other important dimensions that are private and not observable to the firm Because it is often impossible for firms to design a contract for each individual consumer, they design a contract for each *type* of consumers and let consumers self-select into different contracts In equilibrium, firms will offer a line of products distinguished by different quality, warranty, and price levels For the sorting theory of warranties to have a presence in a given market, different combinations of these three attributes must be observed in the data The sorting theory also implies that, in equilibrium, in response to the menu of warranties the firm provides, customers with the same observable attributes but different degrees of risk aversion will exhibit different choice behaviors for warranty contracts in accordance with their risk profiles

Signaling theory The signaling approach examines the information content of warranties under information asymmetry (Akerlof 1970, Riley 1979) The key assumption of signaling theory is information asymmetry in the sense that sellers have better knowledge about the product quality than buyers Thus, buyers may not be accurately informed about the product performance before purchase because of the random nature of product quality, and sellers need to signal product quality through warranties, similar to how they signal quality through advertising (Nelson 1974)

Several researchers have studied the signaling role of warranties in different contexts (e g , Balachander 2001, Grossman 1981, Lutz 1989) [3] In Spence's (1977) influential work in this area, consumers try to infer product quality from product price or warranty Warranties can be a signal of product quality and consumers can be well informed in equilibrium because (1) warranties are costly to the seller and (2) the costs are systematically related to product reliability Quality signaling of warranties implies a *positive* relationship between product quality and warranty duration because only high-quality firms can afford long warranties because of their associated costs of fulfillment However, for a low-quality seller, signaling works only if the provision of a good warranty raises the seller's cost to a level higher than that of the high-quality seller If the low-quality seller can offer a good warranty and fully absorb the higher cost of warranty fulfillment by charging a higher price, warranties will not be a successful quality signal (Kirmani and Rao 2000)

Incentive theory Incentive theory examines firms' and consumers' incentive problems resulting from the provision of warranties (Cooper and Ross 1985, Lutz 1989, Lutz and Padmanabhan 1995, Priest 1981) The key assumption is risk endogeneity in the sense that buyers' and sellers' actions can affect product performance The probability that a product will break down is a function of its intrinsic quality, which depends on firms' product efforts and consumers' maintenance efforts The maintenance effort is costly to consumers and unobservable to sellers, so warranties cannot be made conditional on the amount of effort expended When choosing warranties, firms must take the moral hazard into account That is, they must consider the effect of warranties on consumers' incentive to take care of the product

The incentive issue on the firm side involves two aspects The first is firms' incentive to signal product quality to consumers through warranties in the presence of consumer moral hazard, and the second is firms' incentive to invest in product quality and supply high-quality products According to Lutz (1989), the seller's incentive to signal product quality is strongly affected by the interaction between consumers' perceived quality and maintenance effort Maintenance effort can be either positively or negatively correlated with perceived product quality Lutz shows that in both cases, a *negative* relationship between perceived quality and warranty is possible

Warranties may also affect a firm's incentive to improve the quality of its product and supply a high-quality product, at least to the extent of reducing the chances of its falling below the warranted level (Heal 1977, Priest 1981) This is because quality improvement reduces a firm's future warranty compensation and increases its profits Therefore, we expect a positive relationship between quality and *previous* warranty terms and a positive relationship between warranty terms and *new* product reliability

Empirical Research on the Economic Roles of Warranties

Little empirical work examines all competing theories of warranty provisions in actual markets, though some research tests the signaling role of warranties with market data The findings are mixed, positive, negative, weak, and no relationships are all reported in the literature

Kelley (1988) and Wiener (1985) use *Consumer Reports* (*CR*) data to examine the relationship between warranty coverage and reliability for consumer durables, appliances, and automobiles and find a significant, positive association between warranty coverage and product reliability for the majority of products examined Douglas, Glennon, and Lane (1993) examine the relationship between warranties and reliability for automobiles and find a significant, negative correlation However, higher warranty terms reflect higher levels of reliability when dealer costs are taken into account Gerner and Bryant (1981) investigate warranties of five products and find that warranty scope tends to converge to standard basic coverage within and across appliances, indicating a weak relationship between warranty and reliability Priest (1981) compares the duration of warranty coverage with expected service life for automobiles and various appliances and finds no support for signaling theory Agrawal, Richardson, and Grimm (1996) use *CR* data to examine the relationship between warranty terms and reliability for a sample of household appliances and electronic products and find that warranty terms are poor predictors of brand reliability for the sample under study In the Canadian used-car market, Soberman (2003) finds indirect evidence of sellers using the length of base warranties and both prices and a menu of extended warranties to signal and screen simultaneously Our study differs from these in that we examine all four theories on the roles of manufacturer base warranties in the server and automobile markets

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[3] Grossman (1981) studies the quality signaling of warranties when the quality or quality characteristics of the product are *ex post* verifiable, Lutz (1989) studies quality signaling under consumer and firm moral hazard, and Balachander (2001) studies quality signaling in markets characterized by new entrants competing with established brands

Wiener (1985), Kelley (1988), and Agrawal, Richardson, and Grimm (1996) all use *CR* data, but they reach different conclusions, even for the same product categories A key challenge with empirical work is obtaining the data that will help understand the various relationships of interest, while controlling for other factors that could influence the key factors, such as quality and warranty duration

In summary, empirical work has not kept pace with theoretical developments, particularly in the areas of insurance, sorting, and incentive roles Indeed, little work has simultaneously assessed the four economic rationales for warranty provisions and determined which rationales are consistent with the data Our objective is to make some progress in this area

Data Summary

We use data from the U S computer server and automobile markets to assess the four theories on the economic rationales of warranty provision For the computer server market, we focus on x86-based servers, for the automobile market, we focus on new cars

x86 Server Data

The U S x86 server market includes both large players (e g , Hewlett-Packard [HP]/Compaq, Dell, IBM, Sun) and small players (e g , Acer, Fujitsu Siemens, Toshiba) In 1999–2004, 6 2 million servers were sold to various institutions with total revenues of $36 5 billion (according to Gartner Research data) During this period, sales of x86 servers more than tripled, and their revenues nearly doubled Dell's shares increased from 23 4% to 29 7%, HP came in second place, though its shares dropped from 48 5% to 26 0% IBM primarily sold mainframe servers and came in third place in the x86 server market Sun entered the market in the late 1990s but had a relatively low presence

We collected manufacturer warranty duration data (in months) for major server models sold in the U S market, together with their wholesale and retail prices and main product attributes, such as processor number, speed and type, RAM size and type, hard drive size, number of hard drives, total slots, and bays We collected these data by visiting manufacturers' and resellers' Web sites and other relevant Web sites, searching copies of *PC Magazine* and other related publications, and directly contacting manufacturers and resellers Multiple sources enabled us to validate and cross-check information from the various sources

We obtained quarterly data on corporate customers' quality evaluations of servers in the U S market for 2002–2004 from Technology Business Research Inc (TBRI) This firm conducts a quarterly survey of corporate information technology buying behavior and customer satisfaction of x86 servers The firm screens respondents, and only those who are personally involved in evaluating or recommending x86 servers for their organizations are eligible to answer the questionnaire Survey questions include firm demographics, server purchases and vendor switching, hardware quality evaluation, overall value of the purchase, ease of doing business with the vendor, delivery time/product availability, replacement parts availability, telephone support, on-site support, and overall satisfaction The evaluation questions are administered on a seven-point Likert scale, where 1 is "totally dissatisfied" and 7 is "totally satisfied or excellent" All firms receive high evaluation, indicating high overall server quality Dell has the highest mean score of 6 21 (SD = 07), though it is only slightly higher than HP (M = 6 18, SD = 09), and IBM's score is the lowest but still above 6 0 (SD = 07) The TBRI surveys are highly accredited in the industry, all major server makers subscribe to TBRI research and publicize the research results when they outrank their competitors [4]

We obtained data on server manufacturers' quarterly advertising expenditures for 1999–2004 from Competitive Media Report We obtained quarterly wholesale and retail prices of major x86 server models in the U S market from Gartner These data also contain information on major server attributes, by which we match price data with warranty duration and quality evaluation Buyer segments include education, governments, and firms of various sizes, including small offices (1–9 employees), small firms (10–99 employees), midsize firms (100–499 employees), large firms (500–999 employees), and very large firms (≥1000 employees) We summarize the various variables and their definitions, operationalization, and data sources in Table 2

Automobile Data

Automobiles represent a large market in the United States, with 7 6 million cars sold in 2007 and 6 8 million cars sold in 2008 Large automakers include General Motors (21 93%), Toyota (16 47%), Ford (14 73%), Chrysler (10 77%), Honda (10 59%), and Nissan (7 06%) Small automakers include Hyundai, Volkswagen, Kia Motors, BMW, Mazda, Subaru, Mitsubishi, and Suzuki, among others (see www wardsauto com) There are two types of manufacturer base warranties in the automobile market One is a basic car warranty, or "bumper-to-bumper" warranty, and the other is a powertrain warranty A basic car warranty typically repairs vehicles for a specific time and mileage (e g , 3 years/36K miles), whichever occurs first All factory-installed parts and some dealer-installed accessories are covered for defects and workmanship Items such as tires, wiper blades, and batteries are generally not covered under the basic warranty, though some of these parts may have their own warranty A powertrain warranty offers protection beyond the basic warranty and is applicable for major components, such as the engine, transmission, and drive shafts

We collected manufacturer basic and powertrain warranty data for 424 car models available in 2009 in the United States from *CR* (see www consumerreports org) The models are made by 23 manufacturers from six coun-

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[4] For examples, see www lenovo com/news/us//en/2006/09/tbr06 html

TABLE 2
Variable Definition and Data Sources

Variables	Definition/Operationalization	Data Sources
Server Market		
Manufacturer server warranty duration, server wholesale and retail prices, and attributes		Manufacturer and reseller Web sites, various copies of *PC Magazine*, and directly from manufacturers and resellers
Corporate customers' quality evaluation of servers	Seven-point Likert scale, where 1 = "totally dissatisfied" and 7 = "totally satisfied or excellent"	TBRI quarterly surveys
Manufacturer quarterly advertising expenditures		Competitive Media Report quarterly data
Quarterly sales and revenues of server models		Gartner quarterly data
Satisfaction with actual server reliability	Ten-point Likert scale	1999–2004 *PC Magazine* surveys
Automobile Market		
Manufacturer basic warranty	Typically repairs vehicles for a specific time and mileage and covers all factory-installed parts and some dealer-installed accessories for defects and workmanship	www consumerreports org, manufacturer Web sites
Manufacturer powertrain warranty	Offers protection beyond the basic warranty and is applicable for major components, such as engine, transmission, and drive shafts	www consumerreports org, manufacturer Web sites
Overall quality score	A 100-point scale, based on *CR*'s tests, *CR*'s subscriber survey data, and government and/or insurance industry crash tests or rollover tests	www consumerreports org
Accident avoidance	A five-point composite score of *CR*'s test results for braking performance, emergency handling, acceleration, driving position, visibility, and seat comfort Braking and emergency handling carry the most weight	www consumerreports org
Predicted reliability for new vehicles	*CR*'s forecast of how well a model is likely to hold up derived from *CR*'s annual Car Reliability Survey It averages a model's used car verdict for the newest three years, provided the model did not change significantly during that time	www consumerreports org
Car attributes (e g , type, make, manufacturer, horsepower, engine size, MPG)		www consumerreports org
Household demographics and automobile purchase data		Consumer expenditure surveys (www bls gov)

tries (United States, Japan, Germany, United Kingdom, Sweden, and Korea) We verified the warranty data by checking each manufacturer's Web site For each model, we collected data on its type (e g , sport-utility vehicle, sedan, wagon), manufacturer, make, low and high manufacturer suggested retail prices, test car price, interior and exterior specifications, safety features, crash tests results, performance, horsepower, engine size, overall miles per gallon (MPG), overall quality score, accident avoidance, and predicted reliability for new vehicles [5] We used the last three variables as quality measures We also obtained household automobile purchase data from the 2008 consumer expenditure survey (see www bls gov), together with household demographics We matched these data with automobile warranty and characteristics Manufacturer warranty policies, particularly basic car warranties, tend to be stable over time The most recent warranty policy change occurred in 2006 when Ford lengthened its powertrain warranty for Ford and Mercury models to 5 years/60K miles and for Lincoln models to 6 years/70K miles [6]

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[5] *Consumer Reports* gives an overall quality score on a 100-point scale to the model and trim line it tests The score is based on *CR*'s tests, *CR*'s subscriber survey data, and government and/or insurance industry crash tests or rollover tests Accidence avoidance is a five-point composite score of *CR*'s test results for braking performance, emergency handling, acceleration, driving position, visibility, and seat comfort Braking and emergency handling carry the most weight Predicted reliability is *CR*'s forecast of how well a model is likely to hold up and is derived from *CR*'s annual Car Reliability Survey It averages a model's used-car verdict for the newest three years, provided the model did not change significantly during that time

[6] Other warranty policy changes exist in the automobile industry Most changes occurred around the turn of the century and are not covered in the data Mitsubishi lengthened its basic warranty from 3 years/36K miles to 5 years/60K miles and its powertrain warranty from 5 years/60K to 10 years/100K miles in 2004 Hyundai lengthened its basic warranties from 3/36 to 5/60 and its powertrain warranties from 5/60 to 10/100 at the beginning of 1999 Chrysler lengthened its powertrain warranties from 3/36 to 7/100 in 2001, and Suzuki had the same change in 2002 Volkswagen lengthened its basic warranty from 2/24 to 4/50 and shortened its powertrain warranty from 10/100 to 5/60 in 2002

Table 3 reports summary statistics of product attributes, warranty duration, and quality levels across all car models The mean test car price is $32,454, the mean MPG is 22 78, the mean engine size is 3 10 liters, and the mean horsepower is 236 66 The mean basic warranty is 3 51 years and 42 63K miles, and the mean powertrain warranty is 5 58 years and 73 76K miles The mean quality score is 69 90 (on a scale of 100), the mean accident avoidance score is 3 63 (on a scale of 5), and the mean predicted reliability for new vehicles is 3 00 (on a scale of 5)

Warranty Patterns in the Computer Server and Automobile Markets

In the computer server market, manufacturers primarily provide base warranties, though they may contract out warranty fulfillment services to third parties All manufacturers offer base warranties for all servers, ranging from three months to three years, with one year and three years the most commonly offered Warranties vary across manufacturers, across the same manufacturers' different models, and across the same server models' different variants For a given model or model variant, however, warranties do not change over time Table 4 summarizes base warranty patterns in the x86 server market For example, HP offers one- or three-year warranties for each model but varies warranty durations across models, the more advanced the model, the longer is the warranty IBM varies warranty durations primarily across models and offers longer warranties for more advanced models For some models, such as the IBM xSeries 226, however, the warranty varies even within a model, though the higher-priced model variants still have longer warranties Dell offers shorter warranties for base models and enhanced models but longer warranties for advanced models Sun offers longer warranties for low-priced and high-priced servers but has shorter warranties for medium-priced servers All other manufacturers either offer uniform warranties for all machines or vary warranty durations across models In summary, although server warranties vary across manufacturers and models, in general the more advanced and the higher priced the model, the longer is the warranty duration

Table 5 reports sales-weighted wholesale price, warranty duration, and perceived product reliability of x86 servers for 2002–2004 for HP, IBM, and Dell Perceived product reliability across these firms is fairly similar Warranty duration and perceived product reliability do not seem to be correlated The raw data seem to support the insurance and the sorting roles of warranties but not the signaling and incentive roles

Table 6 shows warranty patterns and mean quality indicators for major automakers Basic car warranty duration ranges from two to five years, and mileage coverage ranges from 24K to 60K miles The most common basic warranty is "3/36" (62 97% of the car models), followed by "4/50" (20 05%) and "5/60" (15 09%) The powertrain warranty is often longer than the basic warranty, ranging from two to ten years and from 24K to 100K miles The most common powertrain warranty is "5/60" (45 05%), followed by "5/100" (22 41%), "10/100" (12 74%), and "4/50" (11 56%) The most common basic and powertrain warranty combination is "3/36–5/60" (41 98%), followed by "3/36–5/100" (19 10%) and "5/60–10/100" (12 74%)

TABLE 3
Summary of Product Attributes and Warranty Durations for Automobiles

	M	SD	Minimum	Maximum	Mdn	Mode
MSRP low	26,621	15,748	9,970	98,500	21,647	15,455
MSRP high	38,555	28,745	13,915	296,250	31,499	27,000
Test car price	32,454	16,300	12,745	105,855	28,355	25,170
Overall MPG	22 78	5 56	11	44	22	18
Engine liter	3 10	1 39	1	8 4	2 5	2
Horsepower	236 66	100 78	70	600	228 5	110
Warranty years	3 51	75	2	5	3	3
Warranty miles	42 63	9 50	24	60	36	36
Powertrain years	5 58	1 78	2	10	5	5
Power train miles	73 76	20 72	24	100	60	60
Overall score	69 90	13 86	17	99	71 5	64
Accident avoidance	3 63	1 10	1	5	4	4
Predicted reliability	3 00	1 22	1	5	3	3
Likelihood to buy again	3 00	1 08	1	5	3	4

Notes MSRP = manufacturer suggested retail prices

TABLE 4
Summary of Warranty Patterns for x86-Based Server

Manufacturer	Warranty Duration	Warranty Pattern
HP	1 year, 3 years	Vary across models
IBM	1 year , 3 years	Vary across and within models
Dell	1 year, 3 years	Vary across models
Sun	3 months, 1 year, 3 years	Vary across models
Other manufacturers	3 months, 1 year, 3 years	Either uniform warranty or vary across models

TABLE 5
Sales-Weighted Wholesale Price, Warranty Duration, and Perceived Product Quality for x86-Based Servers

	2002			2003			2004		
	Wholesale Price	Warranty Duration	Perceived Quality	Wholesale Price	Warranty Duration	Perceived Quality	Wholesale Price	Warranty Duration	Perceived Quality
HP	$4,784	30.59	6.11	$5,134	30.59	6.28	$4,688	30.76	6.14
IBM	$5,340	31.41	6.05	$4,837	31.19	6.11	$4,934	31.80	6.03
Dell	$3,921	29.11	6.22	$3,741	28.35	6.26	$3,502	29.41	6.13
Total	$4,506	30.09	6.15	$4,483	29.31	6.24	$4,201	30.66	6.12

Notes: Quality ratings are on a seven-point scale, where 7 = "highest quality."
Source: TBRI.

Manufacturers offer one, two, or three warranty policies for their car models. Honda, Nissan, Toyota, and General Motors offer two warranty policies, and Ford offers three warranty policies for different car makes (e.g., Lincoln, Ford, Mercury), but warranties are the same for all car models of the same make (e.g., Mercury Mariner V6, Mercury Mountaineer V6, Mercury Grand Marquis, Mercury Sable). Of the two or three warranty policies, "3/36–5/60" is offered by Honda, Nissan, Toyota, and Ford for 126 of their 160 car models. General Motors offers "3/36–5/100" warranty for 55 models and "4/50–5/100" for 11 models. All other manufacturers offer uniform warranties for all car models.

Given that many automakers offer similar warranty terms, the information content of warranties is limited. Furthermore, there does not seem to be a consistent correlation between warranty duration and product quality indicators, even for the same manufacturers that offer different warranty policies. For example, the overall quality score for Toyota "3/36–5/60" is 69.23 and for Toyota "4/50–6/70" is 81.00; for Ford, the overall quality score for these two warranty conditions is 69.31 and 66.40, respectively.

Test of Warranty Theories in the Computer Server and Automobile Markets

Test in the Computer Server Market

Insurance theory. We first examine whether the two assumptions underlying the insurance theory hold in the server market. The first assumption is that consumers are risk averse. Although this is a common assumption in the literature, it is difficult to observe measures of risk aversion directly. An indirect evidence of consumer risk aversion is extended warranties, which consumers buy primarily for the purpose of risk sharing. The sales of extended warranty contracts have increased over time (Stafford 2006), implying that consumers buy more warranties to protect against product failure. This makes sense only if consumers are risk averse. The second assumption is that the probability of product failure is greater than zero. According to *PC Magazine*'s various annual surveys, this seems to be the case. The 2002 *PC Magazine* survey shows that 34% units needed repair in the past 12 months, and the 2004 survey gives 28% for all servers and 16% for servers less than one year old. Note that survey respondents are not randomly chosen, and thus these percentages might be biased. Nevertheless, the percentages imply a nontrivial probability of product failure. The nontrivial failure rate justifies the prevalence of warranties as an insurance device in the server market.

We can derive two predictions from the insurance theory. First, the same consumers will buy longer warranties when actual product failure increases and product reliability decreases, and second, more risk-averse consumers will buy longer warranties than less risk-averse ones. To check the first prediction, we need to show that warranty durations and actual product failure rates are positively correlated or that warranty durations and actual product reliability are negatively correlated. To do so, we need information on product failure or reliability rates for each period, which we do not have. From various *PC Magazine* surveys, we obtain annual figures on satisfaction with actual server reliability (a ten-point scale) for 1999–2004. We compute sales-weighted warranty duration for each year and then compute the Pearson correlation coefficient between satisfaction scores of server reliability and warranty duration. The correlation coefficient is $-.721$ ($p = .106$). The correlation is in the expected direction and large in magnitude, but it is only marginally significant. Although we only have six data points (for the six years), the result is still noteworthy. Our finding provides some evidence for the insurance role of warranties in the server market.

To verify the second prediction, we need to know the degree of risk aversion for each type of customer. Although we do not have a direct measure of risk aversion, we can reasonably assume that smaller firms are more risk averse than larger ones, an assumption consistent with previous research in other contexts (e.g., Misra, Coughlan, and Narasimhan 2005). For example, small firms are more risk averse because they are more likely not to have a backup for their server system. If we can show that smaller firms buy longer warranties than larger firms after controlling for other factors, this will be consistent with the insurance theory. To this end, we regress the logarithm of warranty duration on product attributes, price, and firm size; the results appear in Table 7. We tried three model specifications. In Model 1, we use the mean number of employees for firm size (e.g., 5 for small offices, 55 for small firms, and so on). In Model 2, we use the logarithm of firm size in the regression. In Model 3, we treat firm size as a categorical variable. In all models, firm size is negatively correlated

TABLE 6
Manufacturer Warranty Patterns and Mean Quality Indicators for Automobiles

Country of Origin	Manufacturer	Brand	Basic–Powertrain Warranty (Years/1K Miles)	Number of Models	Model Share (%)	Market Share(%)	Overall Score
Germany	Audi	Audi	4/50–4/50	6	1 42	01	77 50
	BMW	BWM, Mini, Mini Cooper	4/50–4/50	23	5 42	2 25	79 00
	Mercedes-Benz	Mercedes-Benz	4/50–4/50	12	2 83	00	78 75
	Porsche	Porsche	4/50–4/50	5	1 18	19	87 40
	Smart	Smart	2/24–2/24	3	71	00	28 00
	Volkswagen	Volkswagen	3/36–5/60	14	3 30	2 30	80 21
Japan	Honda	Honda	3/36–5/60	28	6 60	10 59	73 93
		Acura	4/50–6/70	5	1 18		80 20
	Mazda	Mazda	3/36–5/60	21	4 95	1 96	77 05
	Mitsubishi	Mitsubishi	5/60–10/100	15	3 54	72	65 73
	Nissan	Nissan	3/36–5/60	26	6 13	7 06	72 00
		Infiniti	4/60–6/70	5	1 18		87 20
	Subaru	Subaru	3/36–5/60	17	4 01	1 39	81 53
	Suzuki	Suzuki	3/36–7/100	6	1 42	63	63 83
	Toyota	Toyota, Scion	3/36–5/60	40	9 43	16 47	69 23
		Lexus	4/50–6/70	9	2 12		81 00
Korea	Hyundai	Hyundai	5/60–10/100	22	5 19	2 98	71 23
	Kia	Kia	5/60–10/100	17	4 01	2 03	65 59
Sweden	Saab	Saab	4/50–5/100	3	71	16	70 33
United Kingdom	Jaguar	Jaguar	4/50–4/50	3	71	11	73 33
	Land Rover	Land Rover	4/50–5/60	3	71	22	58 00
	Lotus	Lotus	3/36–3/36	2	47	01	55 00
United States	Chrysler	Chrysler, Dodge, Jeep	3/36–5/100	26	6 13	10 77	51 08
	Ford	Ford, Mercury	3/36–5/60	32	7 55	14 19	69 31
		Lincoln	4/50–6/70	5	1 18		66 40
		Volvo	5/60–5/60	10	2 36	54	68 80
	General Motors	Chevrolet, GMC, Pontiac, Saturn	3/36–5/100	55	12 97	21 93	62 53
		Buick, Cadillac, Hummer	4/50–5/100	11	2 59		64 91

TABLE 7
Regression of Log Warranty on Firm Size

	Model 1			Model 2			Model 3		
	Estimate	**SE**	**t-Statistic**	**Estimate**	**SE**	**t-Statistic**	**Estimate**	**SE**	**t-Statistic**
Acer	896	145	6 180	1 005	145	6 918	922	145	6 370
Compaq	526	146	3 611	635	146	4 350	553	145	3 803
Cray	– 126	212	– 596	– 021	212	– 099	– 104	212	– 494
Data General	284	173	1 643	390	173	2 254	307	172	1 781
Dell	962	147	6 555	1 070	147	7 284	988	147	6 743
Fujitsu/ Fujitsu Siemens	775	152	5 088	885	152	5 809	802	152	5 281
Gateway	879	146	6 015	990	146	6 771	907	146	6 219
HP	433	149	2 918	543	149	3 648	461	148	3 106
Hitachi	629	159	3 963	750	159	4 717	664	159	4 185
IBM	893	148	6 022	1 001	148	6 745	919	148	6 207
Intergraph	541	165	3 276	648	165	3 924	566	165	3 437
MPC	628	153	4 096	737	153	4 802	654	153	4 273
NCR	132	188	703	242	188	1 288	157	187	836
NEC	623	152	4 106	731	152	4 812	649	151	4 283
RLX Technologies	740	145	5 109	854	145	5 892	769	145	5 316
Rackable Systems	219	145	1 507	328	146	2 251	245	145	1 690
SGI	191	156	1 225	298	156	1 910	216	156	1 389
Sequent	– 006	186	– 033	099	186	530	016	186	087
Stratus	607	170	3 561	713	170	4 184	630	170	3 705
Sun	292	146	1 995	401	147	2 734	318	146	2 178
Toshiba	1 337	147	9 064	1 447	148	9 802	1 362	147	9 249
Unisys	390	160	2 436	497	160	3 105	415	160	2 596
VA Linux	362	151	2 401	470	151	3 115	388	150	2 580
CPU1	– 090	243	– 370	– 089	243	– 368	– 090	242	– 372
CPU2	– 187	023	–8 114	– 187	023	–8 105	– 187	023	–8 154
CPU3	– 062	129	– 479	– 062	129	– 480	– 062	129	– 482
CPU4	– 302	049	–6 167	– 303	049	–6 194	– 303	049	–6 191
CPU5	– 416	043	–9 707	– 416	043	–9 725	– 416	043	–9 731
CPU6	030	042	722	030	042	713	029	041	711
CPU7	– 271	018	–14 685	– 271	018	–14 683	– 271	018	–14 707
CPU8	– 144	024	–5 992	– 145	024	–6 021	– 145	024	–6 026
CPU9	– 386	133	–2 901	– 392	133	–2 948	– 394	133	–2 966
ln(price)	222	013	17 674	223	013	17 756	223	013	17 808
ln(CPU speed)	084	014	6 085	084	014	6 092	084	014	6 114
Firm size (1000 employees)	– 142	010	–13 931						
ln(firm size)				– 038	003	–14 449			
Small firms							– 049	017	–2 828
Midsize firms							– 110	017	–6 380
Large firms							– 213	017	–12 375
Very large firms							– 214	018	–12 176
N	7913			7913			7913		
R^2	340			341			345		

Notes Coefficient estimates of specific brands (e g , ProLiant, Integrity) are not reported for space reasons

with warranty duration, and the correlation is significant, even though the difference between large and very large firms in Model 3 is not statistically significant In general, the larger a firm, the shorter is the warranty it purchases After we control for price and other product attributes, small firms have 4 8% shorter warranty durations than small offices, midsize firms have 10 4% shorter warranty durations, and large and very large firms have approximately 20% shorter warranty durations than small offices Large firms may have in-house information technology departments to handle breakdown issues and thus do not require warranties as much as small firms do Although we cannot rule out this possibility because of our lack of data on this aspect, our finding is nevertheless consistent with the predictions of the insurance theory Given these results, we conclude that there is evidence in support of the insurance theory for server warranties

Sorting theory Do warranties play a sorting role and work as a mechanism for second-degree price discrimination in the server market? First, we check whether the key assumption for the sorting role—that is, that consumers are heterogeneous—is met in the server market Matthews and Moore (1987) assume consumer heterogeneity in risk aversion and quality evaluation Consumer heterogeneity definitely exists in the server market because buyers of servers are various institutions In 1999–2004, 5 41% of x86 servers in the United States were sold to educational institutions, 12 10% to governments, 10 92% to small offices, 15.62% to small firms, 21 78% to midsize firms, 15 28% to large firms, and 18 78% to very large firms These institutions differ substantially in size, revenue, income, technical capability, and usage intensity Revenue and income are directly related to risk aversion and willingness to pay for quality and warranties

The sorting theory predicts that nonuniform or a menu of warranties is offered to consumers by the same firms Table 4 lists such a menu The same manufacturer offers three-month, one-year, or three-year warranties for its products For example, IBM offers either one-year or three-year warranties for different variants within its xSeries 226 model These variants are of similar quality and different prices A regression of warranty durations of all 52 variants of this model on product attributes and prices (not shown) indicates that coefficients of all variables, except for price, are not significant, implying some randomness in the assignment of warranty duration However, the price coefficient is positive and significant This is consistent with the sorting theory prediction, whereby manufacturers use warranties as a mechanism for second-degree price discrimination by offering different warranty durations at different prices (after controlling for product attributes) and allowing consumers to self-select into their preferred price/warranty level (Matthews and Moore 1987) Customers are heterogeneous in their risk preferences, some customers are more risk averse and prefer to pay a premium for longer warranties Because manufacturers cannot distinguish customers by their risk aversion, the best they can do is to offer different warranties and let customers self-select into different contracts Given the service nature of warranties and the difficulty of arbitrage, this second-degree price discrimination might be more effective

If the sorting role of warranties is effective, in equilibrium, we should observe different consumers choosing different warranty contracts in accordance with their risk profiles Table 8 shows this behavior On average, smaller firms tend to buy longer warranties, but firms of the same size tend to buy different warranty contracts For example, small firms bought 24 67% IBM servers with 12-month warranties and 75 33% with 36-month warranties, very large firms bought 46 68% IBM servers with 12-month warranties and 53 32% servers with 36-month warranties Firms of the same size apparently have different degrees of risk aversion, which is not observable to sellers Firm size is a proxy for risk preference but not a perfect measure This means that manufacturers cannot price discriminate their warranty contracts on the basis of firm size (third-degree price discrimination) To screen among these buyers more efficiently and extract more consumer surplus, manufacturers offer products that are differentiated along warranty duration and price and let buyers self-select into different contracts This is the essence of second-degree price discrimination in warranty provision

Signaling theory We now examine the quality-signaling role of warranties in the server market In the theoretical literature, signaling occurs at the firm level because the unit of analysis is the individual firm It is not economically rational for manufacturers to use different warranty terms to signal different product qualities because, in the server market, corporate brands (e g , HP, Dell) dominate brand evaluations Poor quality of any specific brand (e g , HP ProLiant) may tarnish the corporate brand and hurt overall sales Given that different manufacturers offer similar warranty durations in this market, the signaling role of warranties should be limited Moreover, because some manufacturers offer different warranty durations for the same model, signaling the product's quality does not seem to be the main consideration

Furthermore, signaling is often used by firms whose product quality is not known to consumers (i e , in markets with information asymmetry) Given that major players in the server market are all well-established firms whose product quality and reputation are well known to buyers through word of mouth, repeat purchase, or public or private information sources, the signaling role of warranties would be further limited Nevertheless, we formally validate the predictions of the signaling role for warranties in the server market

The signaling literature defines quality as reliability, durability, or nonbreakdown performance Although we do not have direct measures of actual reliability information for each server model, we are able to obtain corporate buyers' perceived hardware quality of x86 servers, which are similar to desktops in technology According to *CR* (www consumerreports org), perceived reliability and actual reliability of desktops are highly correlated, therefore, we assume that they are also highly correlated for x86 servers Thus, manufacturers' use of perceived product quality should produce similar results to those using actual quality

TABLE 8
Server Sales Distribution (%) by Server Warranty Duration and Buyer Size

	IBM		HP		Dell	
	12-Month Warranty	36-Month Warranty	12-Month Warranty	36-Month Warranty	12-Month Warranty	36-Month Warranty
Small offices	22 89	77 11	10 30	89 70	31 72	68 28
Small firms	24 67	75 33	15 88	84 12	33 95	66 05
Midsize firms	29 51	70 49	16 20	83 80	40 01	59 99
Large firms	37 50	62 50	17 13	82 87	43 19	56 81
Very large firms	46 68	53 32	20 51	79 49	46 05	53 95
Total	35 80	64 20	17 19	82 81	40 21	59 79

To check whether warranties have any information content about product quality, we regress corporate customers' perceived hardware quality on warranty, advertising, wholesale price, product attributes, and time dummies for HP, IBM, and Dell (see Table 9) The coefficient on warranty is not statistically different from zero A statement will be false if its contrapositive is false, therefore, we conclude that in the server market, warranties do not signal quality

Researchers have proposed several theories on quality signaling, including the signaling value of price (Desai and Srinivasan 1995, Srinivasan 1991), brand name (Png and Reitman 1995, Wernerfelt 1988), and money-back guarantee, (Moorthy and Srinivasan 1995) We show that warranties in the server market do not play a signaling role There are two possible reasons for this First, consumers may have better quality signals than warranties and do not need warranties to signal quality Laboratory experiments have shown that in the presence of multiple cues of product quality, the diagnosticity of some cue types depends on the valence of other cue types in the environment (Purohit and Srivastava 2001) The regression shows that price, manufacturer reputation, and brand names are good signals of quality, which is consistent with Png and Reitman's (1995), Srinivasan's (1991), and Wernerfelt's (1988) theoretical predictions

Second, the precondition for signaling is information asymmetry and buyers being unaware of product quality This precondition may not exist in the server market, in which buyers can obtain quality information from various sources, including repeat purchase, word of mouth, and private information providers Server buyers are various institutions that frequently upgrade their machines and therefore can learn a firm's product quality through repeat purchase Private information providers often publish their research results, and many institutions subscribe to their services and therefore are well informed of product quality This means that server customers may not need to infer quality from warranties

TABLE 9
Regression of Perceived Server Quality on Warranty and Product Attributes

	Estimate	SE	t-Statistic
Warranty	- 000	000	- 853
Price (millions of dollars)	233	096	2 420
Advertising (millions of dollars)	4 290	537	7 988
HP	6 167	009	704 790
IBM	6 022	014	418 800
Dell	6 230	008	817 627
CPU1	- 004	004	-1 043
CPU2	001	004	220
CPU3	- 003	010	- 266
CPU4	- 007	006	-1 180
2Q2002	- 037	006	-5 777
3Q2002	- 048	006	-7 660
4Q2002	- 052	007	-7 736
1Q2003	- 012	007	-1 744
2Q2003	105	007	15 034
3Q2003	067	007	9 361
4Q2003	037	007	4 961
1Q2004	004	007	603
2Q2004	- 104	007	-14 084
3Q2004	- 056	007	-7 828
4Q2004	- 126	007	-17 041
Number of observations	2110		
R^2	807		

Notes Coefficient estimates of specific brands are dropped for space reasons

According to Balachander (2001), new firms may use warranties to signal product quality We checked whether manufacturers changed their warranty policies over time Because IBM and HP are well established in the server market (and did not change their server warranty policies during the data period), we focus on Dell Dell entered the server market in 1996 and was a relatively newer player than IBM and HP The theory predicts that Dell would offer longer warranties in the beginning and shorten its warranties over time when its products improved However, Dell offered one- and three-year base warranties for its servers on entry, the same warranty policy that is in effect today Dell did not change its warranties as its product quality improved This lends further support to our conclusion that warranties are not used to signal product quality in the server market Our finding is consistent with the findings of Agrawal, Richardson, and Grimm (1996), Chu and Chintagunta (2009), Gerner and Bryant (1981), and Priest (1981)

Incentive theory We focus on the manufacturer's incentive problem We investigate how warranties affect manufacturers' incentives to reveal product quality to consumers and improve product quality Regardless of whether the intrinsic product quality and consumers' maintenance effort are positively or negatively correlated, if the incentive motivation exists, the perceived product quality and warranties will be negatively correlated (Lutz 1989), which clearly is not the case (see Table 9) Furthermore, we would expect firms with longer warranties to invest more in product quality improvement, which would reduce future warranty compensation and increases profits, which in turn would result in more reliable products in the future (Heal 1977, Priest 1981) Therefore, product reliability should be positively correlated with *past* warranties

To check whether these relationships hold, we first compute sales-weighted warranties for HP, IBM, and Dell and then compute the correlations between perceived product quality and current and lagged warranty durations (see Table 10) Product quality does not seem to be correlated with warranties, either current or past A statement will be false if its contrapositive is false, therefore, we conclude that in the server market, warranties do not play an incentive role This is not surprising, because server reliability is primarily determined by the reliability of its components, over which manufacturers have little control Different manufacturers may source components from the same suppliers IBM, HP, and Dell all buy chips from Intel or Advanced Micro Devices In addition, competition in the server market may force manufacturers to offer the most reliable products that current technology allows In summary, we find empirical support for the insurance and sort-

TABLE 10
Correlations Between Server Quality and Current and Past Warranties

	IBM		HP		Dell	
	Coefficient	Prob > |r|	Coefficient	Prob > |r|	Coefficient	Prob > |r|
Current warranty	– 096	767	102	752	– 423	171
1 Quarter lag	068	834	– 306	333	– 357	255
2 Quarter lag	343	275	– 411	184	– 027	934
3 Quarter lag	361	249	– 073	821	468	125
4 Quarter lag	290	360	– 193	549	763	084
5 Quarter lag	– 122	705	– 148	646	523	181
6 Quarter lag	– 195	544	224	483	304	337
7 Quarter lag	– 597	041	405	191	289	362

Notes Warranty durations are sales-weighted averages, which vary over time because of changes in product mix

ing roles of warranties in the server market but not for the signaling and incentive roles of warranties

Test in the Automobile Market

Insurance theory We first check whether the two assumptions for the insurance theory are met in the automobile market First, similar to the server market, we find indirect evidence of consumers' risk aversion through their purchases of extended automobile warranties Automobile extended warranties are a lucrative business According to *Warranty Week* (2005a), the market for extended warranties topped $15 billion in 2004 with automobiles and personal computers, accounting for the largest proportion of revenue Top companies of automobile extended warranties include Mogi, Warranty Direct, CARCHEX, StopRepairBills com, U S Fidelis, U S Direct, Auto Protection, Fidelity Automotive, Endurance Protection, and Auto Service Warranty Second, *CR* shows that the mean predicted reliability of new cars is 3 on a five-point scale, indicating that product quality is far from perfect The popularity of automobile extended warranties and the reliability score of new cars indicate the nonzero failure rates of automobiles

The insurance theory predicts that the degree of consumer risk aversion is positively correlated with the duration of warranties purchased We use household demographics, such as age, income, gender, marital status, and number of children, as proxies for household risk attitudes Dohmen et al (2005) find a concave relationship between age and risk attitude and a convex relationship between income and risk attitude This implies a convex relationship between age and warranty duration and a concave relationship between income and warranty duration Jaeger et al (2007) find that married people and people with young children are more risk averse, which implies that they will buy longer warranties Fellner and Maciejovsky (2007) and Rosen, Tsai, and Downs (2003) find that women are more risk averse than men, which implies that women will buy longer warranties

To check whether this is the case, we regress household automobile warranty duration on household demographics and automobile characteristics (see Table 11) The results are consistent with our expectations Warranty duration and age of the household head have a convex relationship Automobile warranty duration first decreases and then increases with age As people get older, they become more risk averse and buy longer warranties Warranty duration and household income have a concave relationship Warranty duration first rises and then decreases with income This is the joint effect of affordability and risk aversion Low-income households are more risk averse, but they may not be able to afford longer warranties High-income households are less risk averse and thus do not need to buy longer warranties Married people buy longer warranties, as do people with more dependent children In general, women buy longer warranties than men Together, the findings are consistent with the insurance role of warranties

Sorting theory We check whether the key assumption underlying the sorting theory (i e , consumers are heterogeneous) holds in the automobile market Automobile buyers are individuals and households that differ substantially in household size and composition, education, income, age, gender, family life cycle, employment, marital status, quality preference, and many other attributes All these are closely related to risk preferences, as Table 11 shows The sorting theory posits that manufacturers should offer a menu of warranties, which is evident in Table 6 Toyota, Honda, Ford, General Motors, and Nissan offer a menu of warranties for their car models, and these five automakers accounted for 70 78% market share in 2008

The sorting theory also predicts that, in equilibrium, households with the same observable characteristics will buy different automobile warranties This is evident in the consumer expenditure data We use household income to illustrate this Table 12 shows the distribution of powertrain warranty ownership across different income groups Consistent with the insurance theory, higher-income households tend to buy shorter warranties because of their lower level of risk aversion However, households of the same income levels also buy different warranties Income can be a proxy for household risk preference, but it is not a perfect measure Manufacturers cannot price-discriminate their warranty policies solely on the basis of household income To extract more consumer surplus, they choose to offer a menu of warranties and let households self-select into different warranty contracts in accordance with their risk preference This is the essence of second-degree price discrimination through warranty contracts

TABLE 11
Regression of Automobile Warranty Duration on Household Characteristics

	DV Basic Warranty Years		DV. Basic Warranty Miles		DV. Powertrain Warranty Years		DV: Powertrain Warranty Miles	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	5 028	050	67 068	685	5 730	079	71 427	1 382
Income	091	028	1 286	384	028	044	516	775
Income^2	– 017	010	– 275	132	– 010	015	– 027	267
Family size	– 012	003	– 166	041	– 013	005	– 275	082
Children <18	010	004	139	050	014	006	215	102
Age	– 054	008	– 779	111	– 010	013	– 277	225
Age^2	007	001	096	010	002	001	020	021
Married	013	005	162	072	017	008	163	145
Female	010	004	159	056	013	006	170	112
White	011	006	175	082	012	009	– 091	165
Overall MPG	– 040	001	– 658	019	– 033	002	– 367	039
Engine size	– 237	006	–3 659	076	– 217	009	–2 804	154
Horsepower/100	– 046	008	– 759	113	014	013	344	229
Test car price	028	000	421	007	025	001	187	013
Manufacturer1	–1 193	035	–17 865	473	–2 122	055	–17 410	954
Manufacturer2	– 223	024	–3 193	332	–1 230	038	–11 035	669
Manufacturer3	–1 096	017	–15 513	228	080	026	34 385	460
Manufacturer4	– 919	017	–13 058	233	– 011	027	1 783	470
Manufacturer5	– 952	017	–13 353	235	– 142	027	39 457	475
Manufacturer6	– 666	022	–8 466	306	280	035	3 321	618
Manufacturer7	1 090	019	11 454	265	5 075	031	40 889	534
Manufacturer8	– 315	055	–4 431	750	–1 359	087	–10 201	1 513
Manufacturer9	1 036	022	10 532	296	5 026	034	39 961	598
Manufacturer10	– 686	107	–10 281	1 462	– 759	169	–4 259	2 949
Manufacturer11	– 971	022	–13 528	294	010	034	159	593
Manufacturer12	–1 297	033	–19 231	453	–2 209	052	–16 504	914
Manufacturer13	–1 598	025	–23 188	345	– 488	040	–4 043	696
Manufacturer14	– 775	018	–9 580	243	194	028	2 075	491
Manufacturer15	–1 515	062	–22 529	850	–2 433	098	–19 931	1 714
Manufacturer16	– 337	072	–5 031	989	– 338	114	37 410	1 996
Manufacturer17	– 959	022	–13 369	304	023	035	550	613
Manufacturer18	–1 012	033	–14 303	456	– 941	053	–7 014	921
Manufacturer19	– 963	017	–13 388	228	026	026	840	460
N	13,744		13,744		13,744		13,744	
R^2	811		790		898		896	

Notes DV = dependent variable

TABLE 12
Percentage of Households Buying Different Powertrain Warranty Years by Household Income Level

Income Group	3 Years	4 Years	5 Years	6 Years	7 Years	10 Years
<20th percentile	99	1 98	84 16	1 98	2 97	7 92
30th percentile	45	1 34	84 82	3 13	3 13	7 14
40th percentile	34	34	85 91	2 41	4 12	6 87
50th percentile	1 70	24	84 67	4 01	2 55	6 81
60th percentile	1 79	64	86 30	3 59	1 41	6 27
70th percentile	68	79	88 14	2 26	3 05	5 08
80th percentile	1 48	68	87 98	2 28	1 99	5 58
90th percentile	1 23	3 86	83 16	5 40	1 70	4 65

Signaling theory We first check whether there is information asymmetry in the automobile market and whether other quality signals are available Automobile manufacturers may have better knowledge about product quality than buyers, but buyers have a variety of sources to obtain information on product quality One important source is Consumer Reports National Research Center, the publisher of *CR* The center conducts annual surveys on product reliability and service quality among *CR* subscribers and provides owner satisfaction and reliability information for hundreds of automobiles based on responses from hundreds of thousands of car owners for the sole purpose of informing and protecting Consumers can also obtain quality information through repeat purchases, word of mouth, and online search Thus, information asymmetry in the automobile market may not be serious Furthermore, consumers may use other cues, such as manufacturer reputation and brand, to infer product quality and thus do not need to rely on warranties for quality information

To test whether manufacturer base warranties have any information content in the automobile market, we run two sets of regressions of automobile quality indicators (overall quality score and accident avoidance score) on warranty duration (years or mileage), product price, and major product attributes One set of regressions includes manufacturer dummies as regressors, and the other set does not The results appear in the upper and middle panels of Table 13 When we do not account for automobile manufacturer fixed effects, the powertrain warranty years are positively correlated with the overall car quality score, indicating some quality signaling effect of warranties However, when we account for manufacturer fixed effects, regardless of which warranty measures or quality indicators we use, the warranty coefficient is not statistically different from zero This implies that warranties have little information content or that their quality signal is weak When other quality signals (i e , manufacturer reputation reflected in the fixed effect) are present, warranty durations are no longer diagnostic of product quality[7]

Incentive theory The insignificant warranty coefficient in the preceding analysis also implies that automobile warranties do not play an incentive role for manufacturers to reveal product quality to consumers We now examine how automobile manufacturers' warranty policies affect their incentives to improve product quality If warranties work as an incentive mechanism for quality improvement, manufacturers of longer warranties should invest more to improve new product quality because this will reduce future warranty costs and increase firm profits Thus, we would expect new product reliability and warranty duration to be positively correlated

We regress the predicted reliability of new vehicles on warranty, product attributes, price, and/or manufacturer dummies The results appear in the lower panel of Table 13 If we do not account for manufacturer fixed effects, of the four warranty measures, only the year of powertrain warranty is positively correlated with the predicted reliability of new vehicles However, after we account for manufacturer fixed effects, the predicted reliability of new vehicles is not correlated with any warranty measures Therefore, we conclude that there is no evidence to support the incentive theory of warranties in the automobile market A reason for the nonexistence of the incentive role of warranties might be the fierce competition in the automobile market, which forces manufacturers to provide the most reliable products In summary, in the automobile market, we also find empirical support for the insurance and sorting roles of warranties but not for the signaling and incentive roles

Conclusion and Implications

In this article, we assess four competing theories on the economic roles of warranties in the U S computer server and automobile markets We combine data on product warranties with data on product quality, prices, and other attributes to accomplish the task We find that warranties in these two markets primarily provide customers with insurance against product failure and work as a sorting mechanism for second-degree price discrimination They are not used to signal product quality or to provide incentives for manufacturers to reveal or improve product quality

To our knowledge, this is the first empirical study to examine systematically the different theories on warranties Thus, it fills the void in the warranty literature on the roles of warranties in actual markets Furthermore, this study assesses the four theories of warranties in both business-to-business and business-to-consumer markets Given the abundance of theories and the scarcity of empirical work in the warranty literature, this study should help inform the validity of different theories and their applications to actual markets

Because the primary value buyers want from base warranties is the insurance they provide when the product fails, one managerial implication of this finding is that when manufacturers and resellers/dealers promote computer servers and automobiles to buyers, they should focus more on the insurance value the warranties provide They can creatively design promotions to emphasize warranty and insurance, and some manufacturers (e g , Dell) already realize this and act on it Many other sellers may benefit from focusing on the insurance value of base warranties

Manufacturers also provide computer server and automobile basic warranties as a means for second-degree price discrimination Buyers of servers include various institutions that have vastly different risk profiles, but most manufacturers provide only one- or three-year warranties Thus, manufacturers should consider offering more warranty options for buyers to choose from For example, they could offer a menu of warranties with three-month, six-month, one-year, two-year, or three-year options to cater to customers' risk profiles more effectively Similarly, automobile manufacturers could enlarge their menus of warranties offered to consumers Manufacturers that currently offer uniform warranties might consider offering a menu of warranties to extract more consumer surplus The service nature of warranties makes it a more effective price discrimination mechanism In markets in which retailers and sellers are the primary sellers of extended warranties, designing product lines on the basis of warranty duration and price may be an effective strategy for manufacturers to capture some of the profits from lucrative extended warranty sales

When manufacturer name and advertising are present, base warranties contain limited quality information to consumers Therefore, manufacturers should focus more on manufacturer reputation and advertising as quality signals and deemphasize the signaling role of warranties In turn, buyers should look for quality information from manufacturer branding and advertising efforts rather than warranty durations

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[7] This might seem to contradict articles in the popular press that talk about Hyundai and Ford signaling quality through warranties However, we estimate an "average" effect across cars that suggests that there is no signaling effect

TABLE 13
Regression of Automobile Quality on Warranty and Product Attribute

	Car Warranty Years				Car Warranty Mileage				Powertrain Warranty Y			
	No Automaker Dummy		With Automaker Dummy		No Automaker Dummy		With Automaker Dummy		No Automaker Dummy		With Aut Dum	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	
Dependent Variable: Overall Score												
Intercept	48 262	6 291	61 425	7 222	47 682	6 197	59 494	6 854	46 199	6 179	49 726	1
Warranty	1 171	836	– 559	1 512	110	067	006	108	765	364	1 989	
Overall MPG	363	159	342	154	367	159	348	154	398	160	360	
Engine liter	–6 273	1 082	–3 390	1 045	–6 207	1 084	–3 309	1 047	–6 545	1 074	–3 206	
Horse power	089	016	065	014	089	016	065	014	092	016	065	
Price ($1,000)	235	066	270	067	229	067	260	067	275	066	247	
N	424		424		424		424		424		424	
R^2	189		485		190		485		194		485	
Dependent Variable: Accident Avoidance												
Intercept	2 050	531	2 223	744	2 042	524	2 181	706	2 171	524	1 564	
Warranty	078	071	060	156	007	006	006	011	022	031	167	
Overall MPG	053	013	062	016	053	013	063	016	053	014	063	
Engine liter	– 121	091	– 069	108	– 118	092	– 065	108	– 135	091	– 067	
Horse power	003	001	002	001	003	001	002	001	003	001	002	
Price ($1,000)	– 006	006	– 001	007	– 006	006	– 002	007	– 004	006	– 002	
N	424		424		424		424		424		424	
R^2	077		128		078		128		076		129	
Dependent Variable: Predicted Reliability of New Cars												
Intercept	1 286	674	1 317	854	1 326	662	1 119	810	753	677	926	
Warranty	103	095	– 010	186	008	007	005	013	107	043	076	
Overall MPG	068	017	085	019	068	017	086	019	074	017	086	
Engine liter	323	120	370	138	326	121	387	138	295	119	379	
HP	– 003	002	– 003	002	– 003	002	– 003	002	– 003	002	– 003	
Price ($1,000)	– 003	008	– 001	010	– 004	008	– 003	010	001	008	– 002	
N	350		350		350		350		350		350	
R^2	078		209		077		209		091		209	

Notes Automaker fixed effects are not reported for space reasons

A direction for further research is to assess these theories in other markets in other countries to determine whether the conclusions hold Markets differ substantially in their degree of information asymmetry, availability of other quality cues, and consumer risk aversion and moral hazard It is likely that warranties assume different roles in different markets, and thus more assessment in different markets should help inform these theories However, we note that the data collection effort required for any given product market is substantial

Manufacturers provide both base warranties and extended warranties Soberman (2003) analyzes a situation in which a seller uses base and extended warranties to signal and screen simultaneously We focus on manufacturer base warranties An important question is how base warranties and extended warranties interact with each other and how manufacturers assign their resources across these two markets We do not have data on extended warranties, and thus we do not explore the insurance and sorting roles of extended warranties We hope to conduct further research in this area

We used aggregate server sales data to different institutions and firms of different sizes to test the different warranty theories Because of the aggregate nature of the data, we were not able to find other proxies for risk aversion Future work could try to obtain firm-level warranty purchase data and firm characteristics and examine their relationships

In summary, we examine four theories on the economic rationales of warranty provision in the U S computer server and automobile markets In both markets, we find support for the insurance and sorting roles of warranties but do not find support for the signaling and incentive roles

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Clemens F. Köhler, Andrew J. Rohm, Ko de Ruyter, & Martin Wetzels

Return on Interactivity: The Impact of Online Agents on Newcomer Adjustment

As service offerings grow in both range and complexity, how service providers and their customers interact is becoming increasingly important. In response to the challenge of optimizing these interactions, companies have introduced sophisticated online "socialization agents," whose purpose is to help new customers more effectively adjust to and function within the service environment. The objective of these online agents, or virtual employees, is to help customers evaluate new or unfamiliar service offerings, as well as help companies achieve greater levels of service delivery and financial performance. To investigate this, the authors analyze the process by which online agents help both new and current customers adjust to and function within new, unfamiliar, or complex service contexts. They examine the impact of an online agent on account performance in the banking industry. They find that both interaction style and content of the online agent significantly influence the newcomer adjustment process over time, which in turn influences firm-level performance.

Keywords: online agents, agent–customer interaction, socialization, newcomer adjustment, service delivery, virtual employees

Online virtual agents are increasingly becoming an integral element for managing firm–customer relationships, particularly in the area of improving self-service capabilities. Some customers actually prefer virtual agents to live representatives because they may provide them with a sense of empowerment and control over the service process (Clarkson 2010). Moreover, younger generations of customers might actually prefer to interact with online agents rather than human agents in service settings (Graeber and Dolan 2007). At the same time, online agents provide a mechanism in which firms can proactively engage customers and involve them in the service experience beyond basic frequently asked-question (FAQ) interactions.

Recent innovations in virtual agent technology can foster more effective and efficient one-on-one customer interactions, but at a fraction of the cost of live agents, enabling companies in various industries (e.g., retail, travel planning, insurance, financial services) to capture market intelligence, increase cross-selling opportunities and revenues, participate in online social networks more actively, automate the delivery of relevant information to prospects and customers, share knowledge interactively with customers, and integrate information flow across internal systems and departments (Clarkson 2010; Graeber and Dolan 2007). More important, virtual agents can help firms provide a consistent and enhanced customer experience that can be closely associated with the brand, in which case the virtual agent him- or herself effectively becomes the brand.

Accordingly, the use of intelligent virtual agents has become one of the most promising technologies in service sectors, such as retail banking, particularly among young consumers (Clarkson 2010; Graeber and Dolan 2007). Although studies have begun to address the increasing importance of online agents in the context of online firm–customer interaction and service delivery processes (e.g., Holzwarth, Janiszewski, and Neumann 2006; Wang et al. 2007), empirical evidence related to the process by which virtual employees enhance the customer experience and ultimately increase financial performance is scarce and equivocal (e.g., Luo et al. 2006; Qiu and Benbasat 2005).

The development and use of online agents is especially relevant in the case in which younger consumers may need to familiarize themselves with complex services that require a significant degree of customer involvement and knowledge, such as within the financial service sector (Li, Sun, and Wilcox 2005). Graeber and Dolan (2007) find that consumers aged 12–21 years were active online, spending more than ten hours per week on the Internet, and that 65% had opened checking accounts, with a majority researching banking alternatives online. For new generations of consumers characterized as "digital natives" (Prensky 2005), information exchange, preference formation, and purchase decisions are primarily shaped through interactive dialogues on social networking sites, virtual communities, and blogs

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

Therefore, it is imperative for service providers, such as retail banks, to develop new online service platforms to build stronger relationships with this consumer segment. In response, firms have introduced virtual employees (or online agents) to which customers who are active online can relate. Organizations have developed these agents as virtual service employees, such as IKEA's "Anna," eBay's "Louise," and Alaska Airlines' "Jenn," with the purpose of assisting customers by providing functional content in response to general queries through frequently provided answers (Wan 2009). The role of these online agents has become more important as consumers demand more from their online experiences (Clarkson 2010).

Consistent with recent theories related to the socialization of customers (Kelley, Donnelly, and Skinner 1990; Kelley, Skinner, and Donnelly 1992), we identify these online agents as socialization agents, designed to help new generations of digital natives function within new or unfamiliar marketplaces. Current research (Ashforth, Sluss, and Saks 2007; Bauer et al. 2007) has shown that the way interactions between socialization agents and newcomers to an organization are designed influences newcomers' adjustment process and enables them to gain the skills and knowledge necessary to function more effectively. However, the implementation of online socialization agents in firm–customer interactions is still in an experimentation phase, and the impact on firms' service and revenue performance has remained uncharted. Therefore, our objective in this article is to investigate the impact of online agent interactions on the newcomer adjustment process and assess how this enhances financial performance.

This study makes three substantive contributions. First, whereas prior research investigating online agents has incorporated only basic verbal and visual cues (Holzwarth, Janiszewski, and Neumann 2006; Wang et al. 2007), we examine an extended set of interaction attributes related to an online agent that pertain to its expanded role as a socialization agent. Drawing from research on both offline (Williams and Spiro 1985; Williams, Spiro, and Fine 1990) and online (Van Dolen, Dabholkar, and De Ruyter 2007) interactions, we investigate how the agent's interaction content and style influence the consumer adjustment process over time. Interaction content involves the type of information (either functional or social) exchanged between the agent and the customer, and style refers to whether the agent reacts to a customer's query or proactively initiates the interaction (Ahuja and Galvin 2003). Some scholars argue that by simply conveying functional content by reacting to FAQs, agents foster consumer adjustment (Holzwarth, Janiszewski, and Neumann 2006; Wang et al. 2007); others show that proactive interaction through both functional and social content leads to more effective adjustment (De Jong and De Ruyter 2004). We examine the interplay between these two elements of the exchange because doing so more closely approximates the dynamics of interpersonal communication behavior. This research contributes to the literature by examining how firms can best align interaction content and style in online agent–customer interactions, particularly among the youth segment.

Second, we extend marketing theory on consumer socialization by introducing the concept of newcomer adjustment and examining how it accounts for the effect of agent–customer interactions on service performance parameters. Drawing from previous research (Bauer et al. 2007; Ward 1974), our approach goes beyond the current conceptualization of socialization, which is limited to the influence of socialization agents (e.g., parents, friends, mass media), and examines how new customers adjust to unfamiliar or complex service contexts by way of their agent-based online interactions. Following Bauer et al. (2007), we use newcomer adjustment as an integral explanatory construct to show the relationship between interaction elements and performance-based outcome measures. Furthermore, using a longitudinal design, we distinguish between distal and proximal variables (Bristol and Mangleburg 2005) to empirically demonstrate the process by which socialization, as a function of online agent–customer interactions, evolves over time.

Third, we assess the impact of newcomer adjustment on financial performance measures. An impediment to the adoption of interactive technologies involves questions about the contribution to bottom-line results. Prior research has yet to examine the impact of online agents on objective measures of firm financial performance. Moreover, Homburg, Wieseke, and Hoyer (2009) argue that firms should not only rely on attitudinal measures when assessing performance but employ objective financial metrics as well. Therefore, it is important to consider the financial consequences and return on investment of such efforts (Srinivasan and Hanssens 2009). Accordingly, we use objective financial data on customers' usage of a specific online socialization agent within the retail banking sector and show how newcomer adjustment can positively influence service usage outcomes.

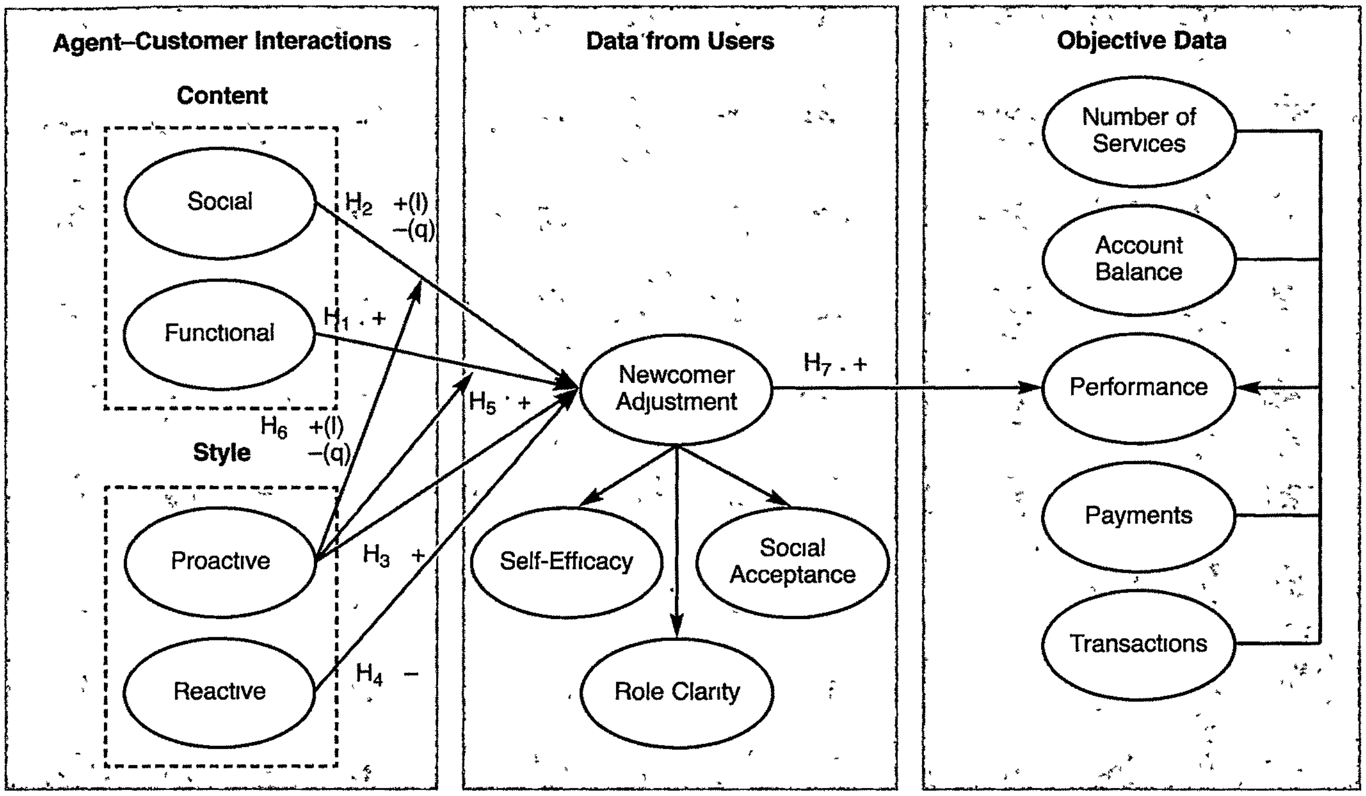
Theoretical Background

Our conceptual framework focuses on the online agent–customer interaction (see Figure 1). In line with research from the organizational socialization (Bauer et al. 2007; Feldman 1981), salesperson–customer interaction (Williams and Spiro 1985), and consumer socialization (Moschis and Churchill 1978) literature streams, the proposed conceptual framework illustrates the process of newcomer adjustment with respect to online agents. In this framework, we hypothesize how specific online agent designs—namely, agent–customer interaction content (social and functional) and interaction style (proactive and reactive)—influence how customers become "adjusted" to new or unfamiliar service settings. In turn, we propose that the degree of socialization in a particular service domain, or newcomer adjustment, influences service usage and firm-based performance as measured through objective measures generated from customer account data.

Online Agents

Companies have long invested in technology with the dual goals of reducing the cost of customer support and improving the quality of the customer experience and firm profitabil-

FIGURE 1
Conceptual Model



Notes For H_2 and H_6, we hypothesize a positive linear (l) and a negative quadratic (q) effect for the curvilinear relationship resulting in an inverted U shape

ity These customer experiences may be goal driven (e g , determining how to apply for a new car loan), but at the same time, they constitute a social experience (Mathwick, Wiertz, and De Ruyter 2008) It is now possible for firms to infuse customer–online agent interactions with social interactions and bidirectional, proactive dialogue (VanBoskirk 2009) For example, with the development of the online agent named Sgt Star (www goarmy com/ChatWithStar do), the U S Army seeks to build interest in enlistment among young people As a result, firms can use these online agents strategically, with the objective of socializing and educating prospective members or customers

The emerging field of research examining online agents in marketing has shown that basic social cues can influence customer satisfaction, enjoyment, and purchase intention For example, Holzwarth, Janiszewski, and Neumann (2006) examine both the effect of the presence of online agents on Web sites and the type of online agent (e g , attractive, expert) on customer satisfaction, attitudes, and purchase intention Their manipulation of online agent attributes (attractiveness and expertise) is based solely on visual- and text-based cues Overall, they find that the mere presence of an online agent leads to greater retailer satisfaction, more positive product attitudes, and greater purchase intentions Furthermore, the study shows that a physically attractive online agent was more effective at moderate levels of product involvement, and expert online agents were more effective at higher levels of product involvement In a similar study, Wang et al (2007) use social cues, including written text, spoken language, an animated character with a computer voice, and a Web site with limited interactivity, to show that social cues lead to increased perceptions of flow, hedonic and utilitarian value, and increased patronage intentions Both studies draw from social response theory, which suggests that people view online agents as human personas when these virtual agents employ social cues (Reeves and Nass 1996)

However, these studies are limited because they are based on a set of narrow social cues involving discrete, one-time, firm–customer exchanges As the young, digital native segment of consumers increasingly perceives and uses the Internet as a social medium, there is a need to explain the more advanced process by which online agents can foster meaningful firm–customer interactions and relationships—that is, to explain how these agents can foster increased levels of adjustment and "socialization" among new customers through real-time interaction Especially in service settings characterized by multiple offerings that are relatively unfamiliar or perceived as more complex, customers may expect or require richer and more involved online interactions Therefore, we propose that in addition to traditional socialization agents, such as friends and parents (Moschis and Moore 1979), online agents with aptitudes for intelligent memory and more highly developed interaction styles can serve as effective socialization agents, leading to greater newcomer adjustment We conceptualize these online agents as computer-mediated personas that possess the capability to involve customers in rich interactive conversations, rather than discrete, basic exchanges, and that have the ability to apply past interaction content to current interactions

Our point of departure from prior research is that we move from social response theory, in which people respond to computer-mediated personas as if they were actual people, to the theoretical foundation of newcomer adjustment rooted in social learning theory (Bandura 1977, McLeod and O'Keefe 1972) The Internet has created a new learning culture, which is social in nature, that enables consumers to discover, discuss, influence, and learn interactively, rather than passively mimicking behavior Modern online agents have the ability to mimic human behavior and record a contact history they can refer to by tapping into an artificial memory Thus, we investigate the process by which online socialization agents can influence a customer's attitudes and behaviors and actively take part in the newcomer adjustment process, we conceptualize newcomer adjustment as the process by which consumers acquire skills, knowledge, and attitudes relevant to their functioning in the marketplace (Ward 1974)

Agent–Customer Interaction

Our study adopts an interaction process perspective to examine virtual employee–customer interactions The selection of variables was governed by Sheth's (1976) conceptualization of the buyer–seller interaction process, which consists of the main building blocks of interaction content and style, in which he referred to interpersonal interaction as the "essence" of buyer–seller relationships (see also Williams, Spiro, and Fine 1990) Recent theorizing in online services has established that effective service interactions and delivery involve both reactive and proactive elements (Pulakos et al 2000) Prior research has discussed reactive or adaptive communication styles in a multitude of contexts, such as selling (Spiro and Weitz 1990) and servicing (Hartline and Ferrell 1996) In service delivery, interactional adaptability is a hallmark of customer–employee interactions (Bitner 1990) Moreover, proactive behavior has been identified as a performance success factor, in which a proactive communication style involves taking initiative in the interaction and suggesting alternatives (Bateman and Crant 1999) Specific to service recovery, De Jong and De Ruyter (2004) demonstrate that reactive and proactive communications are differentially related to service performance parameters These findings lead us to focus on the particular interaction elements of functional and social content and reactive and proactive communication style as antecedents to newcomer adjustment

Newcomer Adjustment

In the organizational behavior literature, the concept of newcomer adjustment has generally been defined as the process consisting of task and social transitions by which new employees gain knowledge and learn behavioral patterns expected of them as members of the organization (see Bauer et al 2007, Jokisaari and Nurmi 2009) Although some scholars have adopted such a single global conceptualization (e g , Ostroff and Kozlowski 1992), the general consensus in the literature is that composite conceptualizations of newcomer adjustment, reflecting specific aspects of adaptation, provide a more comprehensive picture (e g , Bauer et al 2007) In this respect, previous research has identified three distinct elements of newcomer adjustment (1) coping with the demands of the new role, (2) mastering and gaining confidence in carrying out the tasks associated with the new role, and (3) fitting in with the environment and feeling liked and accepted by peers (Feldman 1981)

Prior research has justified the relationship between the global definition of newcomer adjustment and its underlying elements, which essentially reflect context, content, and social environment (Jones 1986), as follows First, in accordance with advances in role theory, scholars of organizational socialization have identified "role clarity" as an underlying dimension of newcomer adjustment because many performance parameters depend on the extent to which new organizational members know what is expected of them in their work roles Research in social cognitive theory shows that newcomer adjustment is dependent less on the actual demonstration of appropriate attitudes and behavior and more on the belief that the person can meet the requirements of the role (Parker 1998) Thus, "self-efficacy" has been identified as the second defining aspect Because newcomer adjustment also involves social transition, it is important that workers feel acknowledged, appreciated, and liked by their peers, this helps them adjust to collective norms and values (Van Maanen 1978) Thus, "social acceptance" is the third defining characteristic Bauer et al 's (2007) meta-analytic review empirically confirms that newcomer adjustment consists of these three key indicators

Accordingly, we propose that customer role adaptation is similar to the process organizational members experience, and we define newcomer adjustment as the degree to which new or current customers (1) learn what roles and expectations are involved as a customer of a specific service provider (e g , the need to bring valid identification to open up a new bank account), (2) gain confidence in mastering required skills and abilities (e g , knowing how to manage a personal bank account), and (3) feel accepted and appreciated by other members in the service organization through company actions that take customer needs and concerns seriously (see Feldman 1981) Relative to customers working through both task and social transitions (Fisher 1987), this conceptualization ties back to previous research on consumer socialization related to how people acquaint themselves with the skills needed to function in the marketplace and become proficient consumers (Moschis and Moore 1979, Ward 1974)

Hypotheses

We propose that online socialization agents influence the newcomer adjustment process, and therefore we illustrate the relevant dimensions of online agents and how these elements influence the process of newcomer adjustment Because the online socialization agents in this study have a virtual presence, we are limited to dyadic interpersonal communication as the driver of newcomer adjustment Prior research examining interpersonal communications has viewed dyadic interaction as comprising two dimensions—namely, content and style (Solomon et al 1985) Thus, the question arises as to how interaction content and style influence the newcomer adjustment process

Interaction Content

Moschis (1985) classifies two main elements of communication content in the newcomer adjustment process socio-oriented and concept-oriented Socio-oriented content refers to information that is conveyed on a social level in an interaction, and concept-oriented content is conveyed as functional or task-specific information Similarly, Comer (1991) argues that information in an exchange can be broadly characterized as either technical (related to the skills and knowledge needed to execute tasks competently) or social (related to the knowledge of the expectations and norms of the group member) This conceptualization is similar to evidence from research examining sales encounters (Williams and Spiro 1985, Williams, Spiro, and Fine 1990) and online group chats (Mathwick, Wiertz, and De Ruyter 2008, Van Dolen, Dabholkar, and De Ruyter 2007) and serves to illustrate that agent–customer interactions consist of both social and functional content These two content-based dimensions are also referred to as socialization tactics within organizational research (Ashforth, Sluss, and Harrison 2007, Bauer et al 2007, Saks, Uggerslev, and Fassina 2007) and have been linked to increased levels of newcomer adjustment

Functional content is defined as task-specific information that is helpful for increasing customer performance and efficiency related to service usage Prior research has shown that functional content (particularly, technical information) in agent–customer interactions increases newcomer adjustment (Ashforth, Sluss, and Saks 2007) Research on sales interactions (Williams and Spiro 1985, Williams, Spiro, and Fine 1990) and online chats (Mathwick, Wiertz, and De Ruyter 2008, Van Dolen, Dabholkar, and De Ruyter 2007) shows that communicating functional information enhances both salesperson–customer interaction and customer satisfaction A higher degree of functional content should help customers better understand and evaluate service offerings and learn how to function more effectively in the organization Therefore, a higher level of functional content should enhance the customer's knowledge about how to perform complex service tasks (self-efficacy), how the company works (social acceptance), and what is expected of him or her (role clarity), thus fostering greater newcomer adjustment Thus, we propose the following

> H_1 Functional content delivered by an online agent has a positive impact on newcomer adjustment

Moreover, agent–customer dialogues focusing predominantly on social content can foster a stronger social bond between the customer and the agent Although social content may not directly pertain to the firm's service offerings, and thus does not increase task-specific knowledge, research has shown that it is instrumental in fostering newcomer adjustment by helping people learn organizational norms and values and by creating a feeling of organizational acceptance (Ashforth, Sluss, and Harrison 2007, Bauer et al 2007, Saks, Uggerslev, and Fassina 2007) and increasing commitment (Sweeney and Webb 2007) The integration of social content in an interaction may help customers feel at ease with and accepted by the company and its representatives Research on online agents (Holzwarth, Janiszewski, and Neumann 2006, Wang et al 2007) suggests that sociability and social cues positively affect the perceptions of online agents, which in turn should foster a more positive firm–customer relationship and lead to increased levels of newcomer adjustment

However, this direct positive relationship between social content and newcomer adjustment may not be as straightforward as it seems Literature in social exchange theory reveals that a social relationship created within the context of an economic transaction (e g , a bank's online agent and a customer) creates a potential mismatch in the exchange that may not be congruent with the customer's objectives (Cropanzano and Mitchell 2005) Consider a situation in which a relationship is primarily social but involves financial risk On the one hand, a social relationship induced through social content may lead to higher levels of customer trust and a more engaging firm–customer relationship On the other hand, an interaction based on higher levels of social rather than functional content may also lead to less-than-optimal customer decision making and misunderstanding or conflict between the customer and the organization This is particularly evident in financial transactions when the parties in the relationship have opposite goals driven by economics, not social standing In addition, higher levels of social content may lead the customer to perceive the online socialization agent as a "friend" but may also foster a feeling of social closeness to the agent that can induce higher levels of self-disclosure (Cozby 1973) This feeling may result in the customer disclosing information on a personal level, but it may not help facilitate the newcomer adjustment process with respect to the customer learning about and evaluating the specific service environment and its offerings Instead, it focuses the interaction on elements unrelated to the service and the organization

Therefore, we suggest that social exchange leads to positive outcomes, but only up to a certain point This type of relationship might not be linear, as is most common, but rather curvilinear (see Singh 1998) We propose that within limits, social content (and overall agent sociability) leads to higher levels of newcomer adjustment because it creates a more positive relationship, helps newcomers learn company norms and values, and leads to a feeling of organizational acceptance At the same time, we propose that there are limits to the effectiveness of social content in agent–customer interactions, particularly in highly involved service settings characterized by financial risk Given that our research examines a complex service environment characterized by economic transactions (banking services), higher degrees of social interaction relative to functional content can be detrimental and lead to lower levels of newcomer adjustment However, to a certain extent, the inclusion of social content in the interaction should help foster a closer customer–firm relationship by increasing perceived levels of acceptance by the organization, which in turn leads to higher levels of newcomer adjustment. Accordingly, we propose the following:

> H_2: Social content delivered by an online agent has an inverted U-shaped relationship to newcomer adjustment.

Interaction Style

Ashforth, Sluss, and Saks (2007) argue that "proactive" behavior on the part of new employees can enhance the newcomer adjustment process. Specifically, proactive behavior can assist new employees in searching for relevant information and in forming peer networks in the company. Prior research has also shown that proactive behavior is directly associated with increased newcomer adjustment, most likely because these people are actively engaged in knowledge acquisition and task mastery (Ashforth, Sluss, and Saks 2007; Bauer et al. 2007). Furthermore, service employee proactive behavior contributes to a higher rate of service usage (De Jong and De Ruyter 2004), and the effects of proactive behavior are beneficial to service recovery (Worsfold, Worsfold, and Bradley 2007). Therefore, we argue that this is analogous to the situation in which an online socialization agent exhibits higher levels of proactive behavior in the agent–customer dialogue, based on intelligent memory, versus merely reacting to questions. Consequently, we propose the following:

> H_3: A higher degree of proactivity in the interaction leads to a greater amount of newcomer adjustment.

In contrast, research argues that a more "reactive" interaction style leads to less newcomer adjustment because newcomers do not actively engage in searching for relevant information but rather wait until they receive it (Crant 2000; Morrison 1993). In the marketing literature, Challagalla, Venkatesh, and Kohli (2009) suggest that reactive behavior related to employee–customer interactions is associated with negative customer sentiment and reduces the customer's cognitive load, in effect hampering the customer's ability to adjust to new or unfamiliar settings. They argue that reactive interactions come later in the service or product usage process, and thus reactive interactions on behalf of the firm and the customer may diminish or delay the value or utility obtained from product and service use and may result in greater risk for incorrect usage. In addition, virtual agents that exhibit a reactive style may be less convincing as a conversation partner (Isbister et al. 2000). Therefore, a higher degree of reactivity in the agent–customer interaction can lead to lower levels of adjustment.

> H_4: A higher degree of reactivity in the interaction leads to a lesser amount of newcomer adjustment.

Moreover, interaction style and content should not be evaluated in isolation but rather with respect to how they interact with each other. Research has shown that newcomers to an organization can significantly reduce uncertainty and gain more knowledge when they actively pursue relevant functional information (Ashforth, Sluss, and Harrison 2007; Bauer et al. 2007; Saks, Uggerslev, and Fassina 2007). The proactive delivery of specific functional content can increase the total amount of information exchange in dyadic communication. This implies, independent of the main effect of proactive interaction, that the proactive "pushing" of certain functional content by the online socialization agent can positively affect newcomer adjustment by highlighting important topics (e.g., recommending getting a credit card at the start of the summer holiday seasons). In other words, the online socialization agent's proactive interaction style can increase the benefit of functional content because the agent proactively offers relevant information, based on current or past dialogues, that is useful to the customer (Saks and Ashforth 1997). Peppers and Rogers (1997) note that the right information to the right person in the right place at the right time can lead to greater customer value. Therefore, we propose the following moderating effect:

> H_5: A higher degree of proactivity in the interaction strengthens the effect of functional content on newcomer adjustment.

We also propose that social content can have a greater impact on newcomer adjustment when it is proactively communicated to the customer. This seems logical because people may not know how to approach the agent. The agent's ability to convey social content proactively may serve to "break the ice" and enable a more friendly conversational tone. Still, we also hypothesize that high levels of social content may actually harm the newcomer adjustment process because the agent–customer interaction deviates or strays from one related to the specific service offering to one based solely on social content. Therefore, as we posited in H_2, we expect an inverted U-shaped relationship between social content and newcomer adjustment. The effect of proactive interaction should amplify the effect of social content on newcomer adjustment (i.e., at lower levels of social content, consumers will begin to experience higher levels of newcomer adjustment when proactivity is high than when it is low). However, after an optimal level of social content has been reached, continued interaction based solely on social content should lead to adverse effects and decreased levels of newcomer adjustment when proactivity is high rather than low. Thus, we hypothesize the following:

> H_6: A higher degree of proactivity in the interaction strengthens the inverted U-shaped effect of social content on newcomer adjustment: For low levels of social content, a proactive interaction style leads to an increased level of newcomer adjustment, whereas for high levels of social content, a proactive interaction style leads to a decreased level of newcomer adjustment.

Performance

Increased levels of newcomer adjustment among employees are associated with outcomes such as increased employee performance (Bauer and Green 1994). Furthermore, Bauer et al. (2007) find that employees who understand their roles in the organization believe they can perform well on required tasks and that those who feel socially accepted tend to perform at higher levels. Singh (1998) notes that increased role clarity, an element of newcomer adjustment, positively influences employee job performance. We propose that the same relationship should hold for current or prospective customers in the service environment Ramani and Kumar (2008) argue that while marketing managers are increasingly focusing on the profitability of firm–customer interactions down to the level of individual customers, customers are expecting firms to further customize their products and services Ramani and Kumar focus on the concept of interaction orientation, which reflects the firm's ability to interact with individual customers and to take advantage of information obtained through successive firm–customer interactions to generate profitable relationships

Moreover, customers who understand how to use the provider's service offerings, who perceive greater levels of acceptance, and who know what is expected of them are more likely to reach higher levels of account performance Specific to the online setting, Holzwarth, Janiszewski, and Neumann (2006) show that using an online sales agent leads to greater satisfaction with the retailer, a more positive attitude toward the product, and greater purchase intention, and Wang et al (2007) show the positive effect of socialness on hedonic and functional value and retail purchase intention Therefore, on the basis of their interactions with online socialization agents associated with service providers, we expect customers to reflect better performance measures Thus, we hypothesize the following

H_7 Higher levels of newcomer adjustment increase customers' account performance

Empirical Research

Method

Research setting The setting of this research was a large European retail bank with offices worldwide and a yearly net income of more than US$3 billion Financial institutions represent a complex service industry, and often bank customers are reluctant to use financial services because of their complexity (Devlin 2001) In addition, financial institutions are increasingly transferring services online to save costs, and therefore service complexity tends to increase (Sarel and Marmorstein 2003) The challenge for banks is determining how to manage customer relationships online more effectively Additional research suggests that as consumers in their teens and early twenties become interested in saving for expensive items, such as cars and college tuition (Graeber and Dolan 2007), it becomes imperative for financial providers to begin to form relationships with this age group To manage these online relationships and introduce newcomers to its service offerings, the bank we studied developed an online agent that targets 15- to 22-year-olds

Measurement development We conducted a prestudy to confirm the validity of the newcomer adjustment measure Because the model in the organizational literature is second order in nature (Bauer et al 2007), we operationalize newcomer adjustment as a second-order construct with the previously mentioned reflective first-order constructs The first-order construct items are based on an extensive literature review and employ multiple-item, Likert-type scales On the basis of existing literature, we created a pool of 12 questions to measure the first-order constructs of self-efficacy (Webster and Martocchio 1992), role clarity (Rizzo, House, and Lirtzman 1970), and social acceptance (Fey 1955) Next, we conducted a quantitative pretest to verify the validity of the measurements With a sample of 150 participants, we conducted a confirmatory factor analysis to assess the second-order structure using EQS 6 1 (Bentler 2006) Rindskopf and Rose (1988) suggest comparing the chi-square of a one-factor model, in which all items load on one factor, with the second-order model Our analysis revealed a chi-square of 423 53 (d f = 54) for the one-factor model and a chi-square of 145 92 (d f = 51) for the second-order model, resulting in a significant improvement in the second-order model over the one-factor solution ($\Delta\chi^2 = 277$ 61, d f = 3, $p <$ 001)

Data collection We conducted the data collection, which involved three stages, in 2008 First, together with the bank and a third-party company responsible for developing and maintaining the online agent, we developed and administered a questionnaire for collecting self-reported newcomer adjustment scores as well as several control and background variables The questionnaire was administered in Dutch to ensure that participants understood the questions All items used in the study were translated into English and then back-translated into Dutch (see Table 1)

In addition to the items related to the study constructs, the questionnaire asked participants their average time in visiting the bank's Web site (per week), their overall Internet and online banking experience, perceived ease of use and perceived usefulness related to the bank's Web site, and demographic information (e g , age, gender, education) The questionnaire was subsequently sent to 3325 people from an online panel, with a lottery incentive worth the equivalent of US$200 To ensure that respondents had at least some experience with the online agent, only customers who had used the online agent for at least four weeks were asked to participate (this was requested in the questionnaire and later validated with database records) The entire data collection process took four weeks to complete In total, 563 people completed the questionnaire

After the questionnaires were collected, the third-party company responsible for developing and managing the agent matched the respondents (with the respondents' permission) to their online IDs used for chatting with the virtual agent, 2% of respondents denied this request During the matching process, we were not able to identify all the participants in our data set because of missing identifiers However, we were able to match 342 questionnaire participants to the virtual agent conversation database

In the second stage, we matched respondents with a database of all conversations between the virtual agent and the customer This stage involved the collection and classification of all interactions between the online agent and bank customers We included only the agent–customer interactions that occurred two months before the questionnaire data collection Each interaction between the online agent and a customer was initiated by either the agent (proactive style) or the customer (reactive style), and we indicated this in the data set accordingly In addition, each interaction was

TABLE 1
Measures and Items

Construct	SL	CR	AVE	Items
Social Acceptance		96	84	
Fey (1955)	91			I understand the way in which BANK works
	93			I feel accepted as a customer of BANK
	91			I understand the norms and values that are important to BANK
	93			I get along with the employees of BANK
Role Clarity		95	84	
Rizzo, House, and Lirtzman (1970)	93			I know what I need to do as a customer for using BANK services
	89			I know what my responsibilities are when I am using BANK for my banking
	92			It is clear to me what I am obliged to do when using BANK
	92			I know what my role is as a customer of BANK when using its banking services
Self-Efficacy		95	84	
Webster and Martocchio (1992)	92			I believe that using BANK for my banking is a task that I can perform better
	92			I can master using BANK for my banking needs
	91			I believe I can use BANK for my banking as well as I would like
	91			I am certain I can use BANK for my banking needs well
Newcomer Adjustment	90	93	82	Social acceptance (first-order construct)
(second-order construct)	91			Role clarity (first-order construct)
	91			Self-efficacy (first-order construct)
Performance[a]	46	N A	N A	Credit account balance
(formative construct)	45			Number of payments
	30			Number of transactions
	53			Number of services used

[a]SL for performance represent weights All variance inflation factors < 5

Notes SL = standardized loadings, CR = composite reliability, and AVE = average variance extracted Items are measured on a seven-point scale, where 1 = "totally disagree" and 7 = "totally agree," unless indicated otherwise N A = not applicable

categorized as either social or functional in content The third-party company undertook the process of coding the agent–customer interactions (social, functional, reactive, or proactive)

The interaction content was classified as functional when the conversation thread between the agent and the customer was about the underlying services (e g , how to take out a loan, the credit card application process) When the thread was not related to the bank's products or services but rather to personal happenings or events, the agent–customer interaction content was classified as social (e g , when the agent talked about a recent sporting event) An interaction was coded as reactive behavior when the agent simply reacted to a customer inquiry Finally, an interaction was coded as proactive if the agent initiated its own thread, with content ranging from the functional (e g , financial products) to the social (a recent music concert) Similar to a salesperson, the agent has its own preprogrammed intelligence and can react to a question or initiate its own conversation thread

For security and privacy reasons, we aggregated the conversations, leaving only the total number of social, functional, proactive, and reactive statements each respondent had during interaction with the online agent Overall, approximately 8000 conversations were recorded across the 342 respondents during the two-month period Of these, we classified 44 3% as proactive (55 7% reactive) and 51 2% as functional (48 8% social) On average, respondents indicated approximately 12 interactions with the online agent each month

To validate the classification approach, three independent judges (customer-contact managers participating in an executive MBA class) coded a sample of 250 different conversations expressed by the agent The average interrater reliability (Cohen's κ) was 84 The resulting classification provided a coding of statements as either functional or social and either proactive or reactive The variation within the independent variables reflects the amount of social and functional conversation threads the agent had with the customer as well as the communication style (either reactive or proactive)

We designed the algorithm that determined how the agent conversed proactively with clients on the basis of (1) contact history, (2) context-specific information, and (3) random trials We based contact history on previous conversations that were entered into the database and used it for initiating a new conversation thread For example, in a previous conversation, the customer might have mentioned that he or she was searching for a side job to purchase a secondhand car The agent would have used this comment as a cue to proactively begin a new conversation when the customer was online again The agent would use context-specific information to cross-sell the bank's financial products For example, a client might have mentioned his or her vacation plans in one interaction, and the agent would use this thread in a subsequent interaction to inquire about the client's interest in a credit card that could be used during the vacation Random trials were proactive conversations the agent would randomly begin to initiate a thread For example, the agent would initiate a discussion thread by talking about a new product offering in which the client might be interested

We based the scripts that defined how the agent interacted on a large database of possible conversation threads This constituted a self-learning process in which new questions the agent could not answer were saved and subsequently answered by employees of the third-party developer to be fed back into the virtual agent database Therefore, the next time the customer would ask the same or similar question, the agent would be able to provide a more direct answer to the query

The third and final stage in the data collection was to locate current respondents within the bank's system and match them to a database of customer-specific bank performance measures To accomplish this, the data were submitted with an identifier to the bank that matched it to the identifier in the bank system Because not every account holder was also the person who had opened the account and because bank customers might have switched e-mail accounts, we were not able to match 81 customers, which left 261 customers with direct matches in the final sample The final sample used in our study included 56 7% men, and the age range was between 15 and 22 years, with more than 85% of the participants 19 years of age or younger Of the participants, 80% had a high school degree or less, which is in line with the age distribution (the average age for completion of high school is 18 in the Netherlands) Moreover, 67 7% of participants indicated that they spent more than ten hours per week on the Internet

Customer account data included the number of transactions, payments, and credit account level and the number of services actively in use with the bank We used these data as performance indicators Although credit account level can be reflective of financial background, it is also an indicator of the extent to which the customer uses bank instruments for purchasing Furthermore, because it is common for the youth segment to have multiple bank credit accounts across multiple banks to extend overdraft protection (see myfinances co uk 2010), the interaction quality between the customer and the online agent may in part influence how much the customer uses the bank's credit instruments, forgoing other savings or checking service alternatives

Finally, to analyze the dynamic nature of our focal construct newcomer adjustment, we employed a longitudinal design, in which we sent three waves (each wave consisted of a period of two months) of the initial study questionnaire to the same respondents who took part in the main study In addition to newcomer adjustment, we collected perceptions of interaction content and interaction style using semantic differential scales

Analyses and Results

Partial least squares path modeling We employed a partial least squares (PLS) approach (SmartPLS, Ringle, Wende, and Will 2005) to path modeling to estimate the measurement and structural parameters in our structural equation model Unlike the covariance-based approach to structural equation modeling (e g , EQS or LISREL), PLS path modeling is component based and does not require multivariate normal data It places minimal requirements on the measurement level of the manifest variables and is more suitable for small samples than the covariance-based approach (Chin 1998, Hulland 1999, Tenenhaus et al 2005) In addition, PLS path modeling is more appropriate for models that contain complex relationships, a large number of manifest variables (>25), and reflective second-order constructs (Chin 1998, Wetzels, Odekerken-Schroeder, and Van Oppen 2009) Finally, PLS path modeling allows latent constructs to be measured formatively, which is necessary for a construct in our model

Measurement validation We used both reflective and formative indicators (Mode A and Mode B, Chin 1998) for our constructs (see Table 1) We evaluated reliability by means of composite scale reliability (CR, Chin 1998, Fornell and Larcker 1981) and average variance extracted (AVE, Chin 1998, Fornell and Larcker 1981) For all measures, the CR was well above the cutoff value of 70, and the AVE exceeded the cutoff value of 50 (Fornell and Larcker 1981) In addition, we evaluated convergent validity by inspecting the standardized loadings of the measures on their respective constructs (Chin 1998), we found that all measures exhibited standardized loadings exceeding 70 (Hulland 1999) Furthermore, we measured newcomer adjustment as a second-order construct that contained three dimensions (i e , self-efficacy, role clarity, and social acceptance) The PLS path modeling allows for the conceptualization of higher-order factors through its repeated use of manifest variables (Wetzels, Odekerken-Schroeder, and Van Oppen 2009) We also report the loadings of the first-order constructs on the second-order socialization construct in Table 1 The CR and AVE calculated on the basis of these loadings still fulfill the necessary requirements with respect to the cutoff values

Next, we assessed the discriminant validity of the measures Because a construct should share more variance with its measures than with other model constructs (Chin 1998), the square root of the AVE should exceed the intercorrelations of the construct with the other model constructs (Fornell and Larcker 1981) In our study, none of the intercorrelations of the constructs exceeded the square root of the AVE of the constructs (see Table 2) We also inspected the Theta matrix (Θ) and confirmed that no item cross-loads higher on another construct than on its associated constructs (Chin 1998), in addition, the correlations of the residual terms across blocks do not exceed | 2| (Falk and Miller 1992) Consequently, we concluded that all constructs exhibit satisfactory discriminant validity To control for

TABLE 2
Discriminant Validity

Construct	1	2	3	4	5	6	7	8	9	10	11
1 Age	N A										
2 Functional	– 01	N A									
3 Newcomer adjustment	00	31	91								
4 Performance	27	13	39	N A							
5 Proactive × functional	– 04	– 15	30	08	N A						
6 Proactive × social	03	02	31	18	20	N A					
7 Proactive × social^2	– 03	– 09	– 40	– 22	– 11	– 02	N A				
8 Proactive	– 02	– 02	– 18	– 23	– 04	– 04	57	N A			
9 Reactive	– 03	11	– 22	– 16	– 09	– 02	07	06	N A		
10 Social^2	00	02	– 40	– 17	– 10	– 22	00	– 01	03	N A	
11 Social	00	01	41	17	02	– 01	– 24	– 12	– 02	05	N A

Notes Square root of the AVE is on the diagonal N A = not applicable

additional variables, we examined respondents' Internet experience, online banking experience, perceived ease of use and perceived usefulness (both related to the bank Web site), average time spent per week visiting the bank's Web site, and age None of these control variables displayed a significant influence on the relationships in our model One interpretation for this is that the youth segment forms a relatively homogeneous group—that is, as a whole, this generation has grown up active on the Internet In assessing nonresponse bias, we compared the actual agent–customer interactions and performance data of nonrespondents with that of the respondents and found no differences in interaction content and style and performance measures

Hypothesis testing Because the exogenous variables do not have multiple items but are indicators of frequency (number of social, functional, proactive, or reactive statements and interactions), we calculated the interaction terms by multiplying the standardized variables scores We constructed the squared terms in a similar way To test our model and the hypothesized relationships for their statistical significance, we used a (nonparametric) bootstrapping procedure with 500 resamples (Chin 1998, Ringle, Wende, and Will 2005) As Chin, Marcolin, and Newsted (2003) suggest, we employed a hierarchical approach to test our hypotheses in which we first estimated a model with the main effects (and covariates) only and then added the interaction effects We tested whether the model without interactions and the model with interactions were significantly different from each other in terms of explained variance (Chin, Marcolin, and Newsted 2003) Using an incremental F-test, we confirmed that the interaction effects added explanatory power to the final model (F(5, 251) = 50 69, $p <$ 001) We take the estimates reported next from the final model that includes the interaction effects We employed age as a covariate and found that it did not significantly change the model, though it did control for some of the variance Therefore, we do not report it here

The results illustrate that several of our hypotheses are confirmed The results reveal a strong positive, significant effect of functional content ($\beta_{\text{Functional}}$ = 35, $p <$ 001) on newcomer adjustment, in support of H_1 Social content exhibits an inverted U-shaped relationship to newcomer adjustment (β_{Social} = 35, $p <$ 001, β_{Social^2} = – 36, $p <$ 001) Thus, we can confirm H_2 We found no support for H_3, which predicted a positive relationship between proactive interaction style and newcomer adjustment, because it was not significant However, reactive interaction style was significant and negatively influenced newcomer adjustment (β_{Reactive} = – 17, $p <$ 01) Thus, we found support for H_4

Although we found no support for the main effect of proactive interaction style, we found a significant result for proactive style moderating the relationship between functional content and newcomer adjustment ($\beta_{\text{Functional × Proactive}}$ = 23, $p <$ 001) Thus, we confirm support for H_5 Furthermore, we found evidence that proactive interaction style moderates the curvilinear relationship between social content and newcomer adjustment ($\beta_{\text{Social × Proactive}}$ = 17, $p <$ 001, $\beta_{\text{Proactive × Social}^2}$ = – 28, $p <$ 01), in support of H_6

Finally, we found a significant, positive influence of newcomer adjustment on objective account performance (β_{Newcomer} = 39, $p <$ 001), which we estimated through a formative indicator model consisting of four customer matrix variables This yields support for H_7 Table 3 provides an overview of all the results

We tested for mediation (Iacobucci, Saldanha, and Deng 2007, Shrout and Bolger 2002) and found that newcomer adjustment significantly mediates all relationships That is, newcomer adjustment fully and significantly mediates the effects of functional content (z = 3 05, p = 0012), social content (z = 7 46, $p <$ 001), the quadratic term of social content (z = 6 49, $p <$ 001), reactive style (z = 4 75, $p <$ 001), the interaction between proactive style and functional content (z = 4 89, $p <$ 001), the interaction between proactive style and social content (z = 3 77, $p <$ 001), and the interaction between proactive style and the quadratic term of social content (z = 5 83, $p <$ 001) on performance We did not test for mediation of the main effect of proactive style because it was not significant (Iacobucci, Saldanha, and Deng 2007) An F-test confirms that the increase in the variance explained in the dependent variable performance was not significant when we included the direct effects (F(8, 242) = 1 62, p = 20)

Longitudinal analysis In addition to the presented data and analysis, we collected data for further analysis We obtained data from 202 respondents (due to panel attrition) over three additional periods (in which one period equaled

TABLE 3
Hypotheses Testing

Hypothesis	Relationship[a]	Direction	Standardized Coefficient (β)	Result
H_1	FUNC → NEWCOMER	Positive	35*	Supported
H_2	SOC → NEWCOMER	Positive	35*	Supported
	SOC^2 → NEWCOMER	Negative	– 36*	Supported
H_3	PRO → NEWCOMER	Positive	n s	Not supported
H_4	REA → NEWCOMER	Negative	– 17*	Supported
H_5	PRO × FUNC → NEWCOMER	Positive	23*	Supported
H_6	PRO × SOC → NEWCOMER	Positive	17*	Supported
	PRO × SOC^2 → NEWCOMER	Negative	– 28*	Supported
H_7	NEWCOMER → PERF	Positive	39*	Supported

Fit Measures	Endogenous Construct	Model
R^2	NEWCOMER	67
	PERF	22

*$p <$ 01
[a] FUNC = functional content, SOC = social content, NEWCOMER = newcomer adjustment, PRO = proactive style, REA = reactive style, SOC^2 = social content squared, and PERF = performance
Notes n s = not significant

two months) Using a four-wave longitudinal research design, which employed multivariate second-order latent growth curve modeling (LGCM), we modeled the change in the level of newcomer adjustment over time (Bollen and Curran 2006, Preacher et al 2008) and used the change in perceived interaction content and style as predictors We specified a second-order LGCM in which we modeled newcomer adjustment as a higher-order (i e , second-order) latent variable (Hancock, Kuo, and Lawrence 2001) We allowed the error variance of the same manifest variables to be correlated over time We estimated the parameters in the LGCM model using maximum likelihood estimation in EQS 6 1 (Bentler 2006) Because we were interested in whether newcomer adjustment increased over time, we investigated whether the mean of the slope factor was positive and significant Moreover, multivariate LGCM enables us to relate the slope factors of perceived interaction content and style to newcomer adjustment

A meaningful interpretation of growth trajectories requires the assumption of measurement invariance over time, homoskedastic error variances for the manifest variables over time, and scalar invariance of the manifest variables over time (Bollen and Curran 2006, Lance, Vandenberg, and Self 2000) The results suggest that using a series of nested models with the appropriate restrictions shows that the assumptions are tenable according to the chi-square difference test, as well as ΔTLI and ΔCFI (changes in Tucker–Lewis index and change in comparative fit index, respectively) To investigate the form of growth trajectories related to interaction style, content, and newcomer adjustment, we estimated linear and nonlinear models Using the free-loading LGCM approach (Bollen and Curran 2006), we relaxed the restrictions on the slope factors and compared the restricted model using a chi-square difference test test The results suggest that a linear model shows a better fit to the data than a nonlinear model

The multivariate LGCM showed a good fit to the data (χ^2 = 2037 63, d f = 1550, $p <$ 001, Tucker–Lewis index = 98, comparative fit index = 98, root mean square error of approximation = 027, and standardized root mean square residual = 07) The growth factor explained a substantial proportion of variance in newcomer adjustment (R^2 = 65– 74) The estimated slope parameter for newcomer adjustment equals 43 (t = 5 96), indicating that newcomer adjustment increases over time Furthermore, we found that the slope parameters for newcomer adjustment and perceived interaction content were positively correlated (r = 51, t = 5 61) However, the slope parameters for newcomer adjustment and perceived interaction style were not significantly correlated (r = 03, t = 33)

Conclusion

This study investigates the effects of innovative approaches to building firm–customer relationships through online agent–customer interactions We developed and tested a framework that examines online agent interaction design (communication content and style), its effect on newcomer adjustment, and the effect of the adjustment process on objective company outcomes This enabled us to gain a deeper understanding of the new customer adjustment process through the use of online socialization agents We offer empirical support for a broadened view of the customer socialization process that can help companies better understand how they can attract new customers and maintain current customer relationships over time

We showed that functional content has a strong significant impact on newcomer adjustment This finding extends research on salespeople and customer relationships (Williams and Spiro 1985, Williams, Spiro, and Fine 1990) and research on online group chats (Mathwick, Wiertz, and De Ruyter 2008, Van Dolen, Dabholkar, and De Ruyter 2007) It suggests that the delivery of functional content is critical for newcomer adjustment and that online agents should be designed to provide current or prospective customers with relevant and functional content about the service, in turn, this should help customers develop greater perceptions of self-efficacy, help them feel more accepted by the organization, and enhance their ability to use the firm's services

We also showed that social content has a positive impact on newcomer adjustment, in line with pervious research (Holzwarth, Janiszewski, and Neumann 2006, Wang et al 2007) However, this held true only to a certain extent We found that interactions largely dominated by social content actually decreased newcomer adjustment It seems that a mismatch in social versus functional content creates a situation in which bank customers become dissatisfied with the lack of substance in the interaction Although social content is important when entering into a "friendly" relationship with the online agent (as a proxy for dealing with the actual firm), firms should design online agent interactions so that the focus evolves from social to functional to convey information relevant for subsequent business exchanges This is in line with research on self-disclosure (e g , Cozby 1973), in which the agent self-discloses social information and thus the customer feels the need to "return the gesture" Although social interaction may motivate the customer to disclose more about his or her private and social life, by itself it does not help facilitate newcomer adjustment

Moreover, as organizational research showing the positive effects of proactive behavior on newcomer adjustment suggests (Ashforth, Sluss, and Saks 2007, Bauer et al 2007), the effect of functional and social content on newcomer adjustment was enhanced through the use of a more proactive agent interaction style It is important to note that in contrast with a reactive interaction style, which had a lower impact on newcomer adjustment, a proactive interaction style in and of itself had a positive moderating impact on newcomer adjustment This shows that online agents should not function merely as standard FAQ interfaces reacting only to questions, rather, they should be designed also to proactively initiate and maintain customer interactions Proactive interactions (e g , when the agent initiated a conversation) positively influenced newcomer adjustment when combined with the appropriate content (social or functional) Furthermore, as previous research on newcomer adjustment suggests (e g , Bauer et al 2007), the impact of newcomer adjustment on firm performance was, as we expected, positive and significant This leads us to conclude that as a result of both online socialization agent–customer interactions and the socialization process fostering newcomer adjustment, more informed and knowledgeable customers will exhibit favorable firm-level behavior, such as a higher degree of account activity

In the longitudinal analysis, we ran an LGCM on longitudinal data using a third-order approach in which we treated newcomer adjustment as a second-order construct The results show an increase in newcomer adjustment over time To account for this, we incorporated a parallel process model, which showed that social content related to the interaction with the agent primarily accounted for the upward trend in newcomer adjustment This suggests that the amount of social interaction over time affects the newcomer adjustment slope positively

Research Implications

Our findings contribute to the extant body of knowledge related to firm–customer interactions by (1) incorporating an extended set of interaction attributes related to the virtual employee as a socialization agent beyond the basic verbal and visual cues that have been examined in the past, (2) introducing the multidimensional concept of newcomer adjustment and examining its central role in accounting for the impact of virtual agent–customer interactions, and (3) assessing the impact of socialization (newcomer adjustment) on service usage outcomes and financial performance rather than on attitudinal measures that have previously been used The primary contribution of our findings to the development of theory is that online socialization agents can significantly influence newcomer adjustment within a relatively complex service setting This extends previous research examining the effectiveness of online agents by more deeply evaluating the process by which these agents are effective Our results are consistent with the view that simply satisfying customers may not be enough to ensure positive financial performance (Oliver, Rust, and Varki 1997, Rust and Oliver 2000) These findings suggest that for complex service environments, online agent attributes beyond physical appearance and basic verbal cues are needed to improve firm–customer interactions

We show that beyond possessing superficial cues, online agents designed for more advanced firm–customer interactions (i e , the ability to proactively convey both functional and social content on the basis of recall of past conversations) can favorably influence the newcomer adjustment process and increase customers' perceived social acceptance, self-efficacy, and role clarity with the service provider Our results are based on actual firm–customer interactional data, questionnaire data over time, and objective customer account data from the bank employing the online agent, and thus they extend current theory A potential limitation of this longitudinal analysis is that the predictors in the cross-sectional study were different from the predictors in the longitudinal analysis We used actual customer interaction data for the main cross-sectional study, whereas we used perceptions of interaction content and style for the longitudinal study

As we hypothesized, the conveyance of functional content in the customer–company interaction positively affected newcomer adjustment Moreover, we found that social content positively influenced newcomer adjustment, but only to a certain extent Our findings suggest that a limited amount of social content can be positive, but after a certain limit, social content has a negative impact on newcomer adjustment This extends previous research on firm–customer interactions (e g , Williams and Spiro 1985), employee–organization interactions (e g , Bauer et al 2007), and online agents (e g , Holzwarth, Janiszewski, and Neumann 2006, Wang et al 2007) that examines only social content in a linear manner Furthermore, the relationship between functional and social content related to newcomer adjustment might differ depending on the nature of the service context (e g , in hedonic contexts in which social content might exhibit a stronger impact) The sequence of the interaction content (i e , social and functional) might also influence the level of newcomer adjustment Note that our findings are restricted to a utilitarian view and do not incorporate other hedonic constructs that could influence new customer adjustment

We found that a reactive interaction style had a negative impact on newcomer adjustment However, we did not find a significant relationship between proactive style and newcomer adjustment Still, we found that a more proactive style moderates the influence of functional and social content This extends prior research by examining the interaction between content and style in dyadic communications (Holzwarth, Janiszewski, and Neumann 2006, Wang et al 2007) Thus, it is not enough for an online agent to be reactive Rather, our findings suggest that the interaction effect of functional and social content delivered in a proactive manner represents an optimal approach to managing customer relationships in service settings

Whereas prior research on online agents is based on social response theory, we drew on a social learning perspective to account for a more complex agent–customer interaction Although an assumption in our study is that customers actively communicate and interact with the virtual agent as they might a person, future studies should investigate the extent to which people perceive online agents as peers that possess humanlike qualities Research might discover a moderating effect of these perceptions on the relationship between the online agent design and newcomer adjustment

Finally, we emphasize that our study is only a first step toward understanding the newcomer adjustment process in a complex service setting An important avenue for further research would be to conduct a more detailed analysis of the effects of the level of customer engagement or involvement with the online socialization agent (e g , including the concept of flow in an online setting) Our study was based on a correlational design using cross-sectional data, however, further research could be conducted in an experimental setting to establish causality Moreover, research has shown that higher levels of trust in recommendation agents increase consumer acceptance (Bart et al 2005) Therefore, further research could examine our model within a trust-based perspective and investigate whether trust in the socialization agent moderates the relationships between the socialization agent design and the newcomer adjustment process

Managerial Implications

Our findings suggest that company-designed online agents can effectively serve as customer socialization agents, influencing customer attitudes and behaviors and satisfying the demands of new generations of customers for richer online interactions As our findings show, online agents function as important elements within a firm's social marketing and communications strategy The depth of the agent–customer interactions in this research suggests that the bank's virtual agent is recognized not only as an important source of financial information but also as a friend, a mentor, and an advisor In this finding lies the practical relevance of our study, one that evaluates the strategic role of this technology in helping young consumers adjust to their part as financial customers and the impact of this on firms' bottom lines Moreover, our findings should be considered in the context of a firm's current customers who might be interested in new services or products or who need assistance with services with which they are not familiar

Our research highlights several implications for marketing practice First, our findings reveal the role of online socialization agents in fostering new customer adjustment through both functional and social interaction content We show that the agent's ability to communicate both functional and social content is a significant driver of positive performance outcomes, including account activity related to company financial performance We also show that agent–customer interactions based on functional content significantly influence customers' perceptions of effectiveness and acceptance within the organization and enhance their ability to evaluate and use the bank's services Although social content positively influenced the newcomer adjustment process, we also found that agent–customer interactions dominated by social content diminished the customer adjustment process This emphasizes the need for mangers to recognize the role of functional versus social interactions when developing content within online agent–customer communications Furthermore, because we drew the communication constructs employed in this study (content and style) from the communications and sales performance literature, the results should be considered in the use of real-life agents With virtual agents, the process of communication and the capture of information to be used in the agent–customer interaction are automated and, thus, controllable With real-life agents, even those supported by sophisticated customer relationship management systems, the challenges to reaching this level of consistency include human error, emotions and moods, and other factors that might affect the dynamics and quality of the firm–customer interaction

Second, our results highlight the role of proactive agent–customer interactions We found that the effect of both functional and social content on newcomer adjustment was enhanced through the use of a proactive agent interaction style Whereas previous generations of online agents have been designed to react to customers' FAQs or requests, we found that merely reacting to queries limits agents' ability to truly "socialize" customers This suggests that service providers and customer service functions can benefit from investments in the design and development of online agents that are proactive and that base the interaction on memory of past interaction content to address or respond to customers' needs

Third, because of the ability to instill a social element in agent–customer interactions online, the findings suggest that firms could provide online agents at additional locations in which current or prospective customers are active, not just solely on the firm's Web site For example, in addition to the bank's Web site, the online agent in this study has a presence on Microsoft's Live Messenger (an online chat service/client), on an online social networking site similar to Facebook, on television programs, and at events targeting young audiences Increasing the agent's presence beyond the firm's Web site may help foster the perception of the socialization agent as a friend and a peer rather than merely a representative of a larger enterprise Future customer touch points could involve Twitter, Facebook, blogs, and even location-based social media in which the agent can communicate dyadically, not only with one customer but also with multiple customers at the same time, possibly even facilitating social interactions between different customers These multiple consumer touch points could help convey a humanlike quality to what might be perceived as merely an impersonal online avatar This also helps the firm build awareness for the online agent and creates a more intimate relationship with (prospective) customers through nonconventional channels

Fourth, the framework we present and test in this research could be considered a basis for measuring the financial return of investing in new interactive service and sales technologies Building on our research showing the importance of interpersonal interactions in generating closer firm–customer relationships and positive firm-based outcomes (e g , increased account performance), companies should continue to invest in and develop innovative and interactive platforms that enable greater control over online customer engagement—interactions that in the past might have varied widely in quality depending on the specific employee providing the service or participating in the interaction Proactive and personalized service or product suggestions facilitated by online agents can also result in increased revenues through cross-selling opportunities, and the efficiencies gained from the use of advanced online agents can reduce overall call center costs However, because the four measures of financial performance we used were key indicators for the focal bank, we can only surmise that companies in different industries will benefit from a similar approach, while using different performance metrics In addition, the analysis of financial returns (e g , those from cross-selling opportunities, cost reductions gained from efficiencies, reduced call center costs) should be balanced with increased activity in terms of how these performance indicators might also result in increased variable costs to the bank

Finally, our findings emphasize the importance of aligning interaction content (e g , functional and social content) with the service offering at hand Depending on the specific industry and service environment, the customer socialization process may differ with respect to the relative importance of more social or hedonic content versus functional and utilitarian content Companies should develop customer–firm online interaction content that is congruent with the nature of the service (or product) and accounts for the levels of risk (social or financial) involved in the transaction Because our findings are limited to the consumer banking context, the use of online agents in other service settings, such as high- and low-involvement consumer goods and business-to-business settings, should be explored

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Amar Cheema & Rajesh Bagchi

The Effect of Goal Visualization on Goal Pursuit: Implications for Consumers and Managers

This research demonstrates that as people approach a goal, external representations, which increase the ease of visualizing the goal, enhance goal pursuit. Specifically, consumers judge easy-to-visualize goals to be closer than difficult-to-visualize goals, which in turn increases effort and commitment. Ease of visualization affects performance in swimming competitions and the physical effort exerted in the lab. Visualization also affects commitment toward savings, willingness to wait for service, and performance in a simulated sales task. Importantly, the beneficial effects of visualization exist only when people are close to the goal. In addition, the effect of visualization attenuates when the goal is split into subgoals. Managers can use these results to enhance consumer goal pursuit, influence consumer satisfaction in online service encounters, and motivate employees to improve performance. In these varied contexts, visual representations of goal progress (e.g., progress bars) enhance motivation as people approach their goal.

Keywords: goals, motivation, visualization, goal-gradient effect, progress

Imagine that a firm implements a sales competition in which salespeople who achieve 20% more than their annual target win a vacation to Hawaii. Because this is a highly desired prize, members of the sales team are in hot pursuit of their individual goals. Imagine that it is the last quarter, and the salespeople can frequently check their results relative to the final target. Their progress can be reported in three ways: (1) numeric form as sales dollars (e.g., "You have completed $80,000 of sales toward a competition target of $95,000"), (2) numerically in terms of percentage completed (e.g., "84.2% of your competition target of $95,000"), or (3) visually in the form of a progress bar depicting the amount of progress made toward the goal. Which representation of progress is likely to motivate salespeople the most? In this scenario, we predict that the graphic representation, which allows salespeople to visualize their results relative to the goal, will be the most motivating.

Prior research has demonstrated that mental simulation enhances people's ability to visualize outcomes, thus increasing goal pursuit (Pham and Taylor 1999). Research on distance perception suggests that people who can see an object judge it to be physically closer than people who judge the distance of an equidistant hidden object (Nasar 1983). Visual representations of the goal, which are easier to process than other forms of representations (Larkin and Simon 1987), also enhance people's ability to visualize their goals. Thus, the ease with which an external goal marker can help visualize the goal might increase people's perceptions of goal proximity, leading to increased effort (Naylor and Ilgen 1984).

Research on goal following also indicates that proximal goals, which are easier to attain than distal goals, increase motivation and performance (Bandura and Schunk 1981; Naylor and Ilgen 1984). The goal-gradient effect reveals that effort invested in reaching a goal increases with proximity to that goal (Hull 1932; Kivetz, Urminsky, and Zheng 2006). In other words, people pay more attention to the goal as they get closer to attaining it.

This research investigates the effect of goal visualization on goal pursuit as people approach a goal. We posit that the ease of visualizing a goal may enhance proximity perceptions and goal pursuit. Consistent with the goal-gradient effect, we expect that this influence is stronger when people are near their goal and paying attention to it than when they are farther away from it.

Across five studies, we show that when people are near their goal, those who can easily visualize the goal exert more effort and report greater commitment than those who cannot easily visualize the goal. In Study 1, we analyze data from 1500-meter Olympic and sectional swimming competitions to show the effect of visualization on effort. Because it may be easier to visualize the finish of a race when swimming toward (rather than away from) the finish line, swimmers should expend greater effort to reach the finish line. Moreover, the beneficial effect of visualization is likely to

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

be stronger toward the end of the race than at the beginning Our analyses confirm these predictions. In Study 2, we replicate the effects of visualization on effort by measuring people's ability to exert a sustained grip pressure Although fatigue leads to a decline in the force exerted over time, this decline is less steep for people who can easily visualize the goal than for those who cannot

Studies 3 and 4 replicate the effect in marketing contexts and provide a process explanation When people are near their goal, ease of visualization increases proximity perceptions or perceptions of progress Specifically, Study 3 shows the effect of visualization on savings and reveals that even when consumers are provided with precise textual information, those in the easy-to-visualize condition judge the goal to be closer and are more committed to reaching it than those in the difficult-to-visualize condition Study 4 illustrates how progress perceptions mediate the effect of visualization on consumers' goal following in a service setting Finally, in Study 5, we replicate these effects in a sales context with monetary rewards and identify goal framing as a moderator Framing a goal of 20 sales in a consolidated manner elicits greater effort (the goal is achieved faster) than when this goal is split into four separate subgoals of 5 sales each Furthermore, ease of visualization enhances effort in the consolidated goal condition, but the effect of ease of visualization on effort is attenuated when goals are divided into subgoals This is because the amount of effort required to achieve each of the subgoals is likely to be smaller when a goal is split into several subgoals, and therefore the advantage of ease of visualization is also likely to be lower than when the goal is consolidated

This research strives to make four important contributions First, from a theoretical standpoint, given the research on the goal-gradient effect, we demonstrate that ease of visualization enhances goal pursuit when people near their goal We identify this phenomenon in real-world settings and replicate these effects in the laboratory Second, we identify the underlying process of this phenomenon—namely, ease of visualization makes the goal appear closer and, consequently, increases effort expended Third, because much of consumer behavior is goal directed (Bagozzi and Dholakia 1999), we demonstrate implications of goal visualization in the marketing-relevant contexts of consumer savings and a service setting Fourth, we identify boundary conditions for these effects We show that the effect of ease of visualization is stronger when goals are framed in a consolidated manner Separating a goal into multiple subgoals attenuates the effect of visualization on goal pursuit These results are especially relevant for managers who are interested in influencing consumers and increasing employee productivity In consumer contexts, we find that ease of visualization has a stronger influence on inferences when the goal is near Thus, managers could increase commitment, persistence, and effort by enhancing ease of visualization as people approach their goals in several contexts, such as in service settings (e g , waiting in line) or loyalty rewards contexts

Our findings are also useful in increasing employee productivity Extant research demonstrates the importance of goal pursuit in managerial settings (Brown, Cron, and Slocum 1998, Brown and Peterson 1994) and shows how goal setting influences employee engagement, optimism, and individual performance (Medlin and Green 2009) Our findings suggest that in addition to goal proximity, goal framing can affect performance We find that ease of visualization has a stronger influence on goal pursuit when the goal task is framed in a consolidated manner than when it is split into multiple subgoals

Theoretical Background

In a review of goal-related literature, Austin and Vancouver (1996, p 338) characterize goals as "representations of desired states " In the current research, this desired end state manifests in different ways across the five studies The studied goals include finishing a 1500-meter swim as quickly as possible (Study 1), reaching the end of 130 seconds when exerting effort (Study 2), saving $750 by the end of six months (Study 3), waiting until the end of 13 minutes (Study 4), and selling to 20 clients as quickly as possible (Study 5) These goals have specific start and finish points, which are necessary to study goal proximity effects Furthermore, because our objective is to study the effect of goal visualization on perceptions and effort contingent on distance from one specific goal, we examine these influences for a single goal in the absence of competing goals We elaborate on these considerations in the "General Discussion" section

Goal Proximity Increases Effort

Observing the academic performance of school students, Bandura and Schunk (1981) find that proximal goals lead to greater individual motivation and better performance than distal goals They suggest that proximal goals provide immediate and achievable incentives and rewards, while distal goals are ineffective in mobilizing effort or directing action Similarly, Naylor and Ilgen (1984) posit that perception of enhanced feasibility increases the likelihood that people will internalize a goal, thus increasing the effort exerted to achieve it Other research also highlights the relationship between proximity and ease of attainability Specifically, according to Proffitt (2006), people perceive destinations as being farther away when they are more difficult to reach (e g , when a person must walk with a heavy rather than a light backpack)

The goal-gradient hypothesis similarly predicts that the effort invested in reaching a goal increases with proximity to that goal For example, Hull (1932) finds that rats run progressively faster as they approach food A related study finds that rats attached to an apparatus exert more force when food is close versus farther away (Brown 1948) Forster, Higgins, and Idson (1998) replicate this effect of goal proximity on exerted effort In their study, people who must solve a series of anagrams exert increasing amounts of pressure on a metal plate (between anagrams) as they approach the end of the task Forster, Higgins, and Idson propose that goal proximity increases effort because when the goal is near, a fixed increment of progress covers a greater proportion of the remaining distance than when the goal is farther away Thus, the value of the incremental progress increases as the finish draws near

Research on loyalty rewards reveals that people accelerate purchases when approaching redemption goals (Kivetz, Urminsky, and Zheng 2006) Humphrey et al (2004) find that completion goals gain salience as a project nears its end, often superseding economic goals These streams of research suggest that increasing goal proximity enhances attention paid to the goal and, thus, the effort exerted to reach the goal In the next section, we discuss research on distance perception to illustrate how people near their goal (and thus focused on the goal) may perceive easy-to-visualize goals as closer than difficult-to-visualize goals

Ease of Visualization and Perceptions of Proximity: the Moderating Role of Goal Distance

Extant research demonstrates that mental simulation enhances the ability to visualize actions and outcomes and thus enhances goal-directed behaviors (Pham and Taylor 1999) In this research, we examine the role of external markers in aiding visualization and investigate how this influences goal following Newell and Simon (1972) document the facilitating role of external representations (e g , diagrams, scribbles) in enhancing discovery and inference Furthermore, Suwa and Tversky (2002) suggest that external representations reduce working memory load and allow people to focus more attention on the problem

The form of external representation (visual vs textual) can also affect inferences In their seminal article, Larkin and Simon (1987) show that even when visual versus textual forms are informationally equivalent (the information in one form can be derived from the other), they may differ in terms of computational equivalency Two forms of representations are computationally equivalent if (1) they are informationally equivalent and (2) the same inference from each can be quickly and easily drawn Larkin and Simon argue that visual representations are easier to process and therefore are computationally less intensive than textual representations Thus, judgments about distance may be more easily inferred from visual representations than from other forms of representations

In the context of goal pursuit, a visual external marker (that allows easy visualization of the end goal) may influence proximity judgments Prior research on distance perception has found that visible objects are judged to be physically closer than equidistant hidden objects Nasar et al (1985) find that students judge a visible building to be closer than an equidistant hidden building Cubukcu and Nasar (2005) show a similar effect in virtual environments Consistent with this effect of visibility, we posit that visual representations of the goal not only enhance the ease with which the goal can be visualized but also enhance proximity perceptions, thus influencing goal pursuit (effort and commitment)

We manipulate visualization in different ways across the five studies Study 1 uses data in which swimmers in 1500-meter Olympic and sectional competitions are either approaching the end of the finish line or swimming away from it We argue that it is easier to visualize the race's finish when swimming toward the finish line than when swimming away from it In Studies 2 and 5, we manipulate different visual representations (that vary in ease of visualizing the goal) in a lab setting In Studies 3 and 4, people in the easy visualization conditions see a visual representation of their current position relative to the start and finish In the difficult visualization conditions, identical numerical information is provided The Appendix illustrates these manipulations

Consistent with our discussion in the preceding section (in which we assert that attention paid to a goal increases with proximity), we posit that the influence of ease of visualization on goal pursuit is stronger as a person approaches the goal In other words, for people near their goal, those who can easily visualize the goal should perceive the goal as closer and easier to achieve and thus should exert greater effort than people who cannot easily visualize the goal

However, when people are far from a goal, we do not expect ease of visualization to have a beneficial effect on effort and commitment First, from a perceptual standpoint, people far from the goal are relatively less focused on the finish and, instead, may assess progress made from the start In the realm of distance perception, Lappe, Jenkin, and Harris (2007) find that people perceive their destination as closer than it really is if they make this judgment by looking at the destination However, when looking back at the start to assess distance, people underestimate the distance traveled (they perceive the start to be closer than it really is) Thus, when people are far from the goal, those who can easily visualize the start may underestimate their progress more (judge the start to be closer) than those who cannot easily visualize the start Second, seeing a distant goal emphasizes the difficulty in attaining it (Proffitt 2006) and may demotivate people who can easily visualize the goal (Locke 1968, Naylor and Ilgen 1984) Consequently, we expect that ease of goal visualization enhances effort and commitment, but only for people who are near the goal

> H_1 Ease of visualization increases effort and commitment when people are near the goal but not when they are far from the goal

We test H_1 in Studies 1–5 In these studies, we manipulate goal distance (proximity) in different ways In Studies 1, 2, and 5, goal distance varies within subjects, and in Studies 3 and 4, the goal distance varies between subjects More specifically, in the scenario-based Studies 3 and 4, participants near their goal have completed a majority of the task (70%–80%), but those far from their goal have completed only a small proportion of it (20%–30%)

We also note two reasons for possible contrasting effects of goal proximity, in which proximal (vs distal) people may show a weaker effect of visualization First, because people closer to a goal have traversed a longer distance than those farther away, they have more information about the effort needed to approach the goal (this is especially the case in Studies 1, 2, and 5, in which goal proximity varies within subjects) Thus, proximal people may be less influenced by external markers than distal people

Second, extant literature in the area of construal representations suggests that psychological proximity engenders a more concrete or implemental mind-set, while distal events lead to a more abstract or deliberative mind-set (Liberman and Trope 1998, McCrea et al 2008, Trope and

Liberman 2003). An implemental mind-set forces people to develop "concrete plans concerning the when, where, and how of pursuing a goal" and leads to quicker implementation of goal-directed behaviors than deliberative mind-sets (McCrea et al. 2008, p. 1309, see also Vallacher, Wegner, and Somoza 1989). Because ease of visualization increases proximity perceptions, the beneficial effect of an implemental concrete (vs. abstract) mind-set should be greater when the goal is distant. Thus, people in the easy visualization condition can reap the maximum benefit of an implemental concrete mind-set compared with those with an abstract mind-set when the goal is distant. When the goal is near, the relative advantage that ease of visualization bestows is likely to be lower because the goal is construed concretely. However, we do not expect to observe this pattern of results because the beneficial effect of visualization is likely to occur only when the person is focused on the goal, and this is more likely to happen when the goal is proximal (as the goal-gradient effect also demonstrates). Next, we discuss how ease of visualization affects inferences when a goal is framed as a consolidated goal and when it is split into several subgoals.

Ease of Visualization and Goal Framing: Consolidated Goals Versus Subgoals

Extant literature suggests that separating a goal into several subgoals can affect goal pursuit positively or negatively. Positive effects derive from the subgoals acting as discrete progress markers that provide feedback, thus enhancing performance (Early et al. 1990, Erez 1977, Locke and Latham 1990). However, recent research identifies conditions in which splitting a goal into subgoals can also have a detrimental effect (Amir and Ariely 2008). This is because separating a goal into subgoals results in two countervailing forces. On the one hand, subgoals make the tasks more manageable and, consistent with goal-gradient theory, may increase effort and performance. On the other hand, multiple subgoals may also shift motivational focus away from the main goal, increasing complacency and therefore decreasing performance. The nature of the influence of subgoals on performance depends on whether the distance to the goal is uncertain or certain. When distance is uncertain (e.g., selling quickly to as many clients as possible), separating a goal into subgoals improves performance. Conversely, when distance to the goal is well known and information is certain (e.g., selling to 20 clients quickly), splitting a goal into subgoals increases complacency and decreases performance.

Therefore, the influence of ease of visualization on performance is likely to be different when a goal is split into several subgoals than when the goal is consolidated. In the former case, the amount of effort required to achieve each of the subgoals is likely to be smaller. Correspondingly, the beneficial advantage of ease of visualization is also likely to be lower for each of the individual subgoals. Furthermore, because after reaching each of the subgoals people are likely to be more complacent and may "rest on laurels" (Amir and Ariely 2008), the combined advantage of ease of visualization is likely to be smaller when a goal is split into multiple subgoals than when it is consolidated.

> H_2: Ease of visualization increases effort to a greater extent when a goal is framed in a consolidated manner than when it is split into subgoals.

We test H_2 and the moderating role of goal framing in Study 5.

Study 1: Effect of Visualization on Swim Times

Data Description

We analyzed data from several 1500-meter freestyle swimming competitions from 2004 to 2008. The data were from the two most recent Olympics freestyle preliminaries (2008 Olympics, Beijing, n = 35, 2004 Olympics, Athens, n = 34) and several sectional competitions (2008 U.S. Open, Minneapolis, n = 35, 2008 Speedo Junior Nationals, Minneapolis, n = 75, 2007 Speedo Junior Nationals, Indianapolis, n = 106, 2006 Speedo Junior Nationals, Irvine, n = 75, 2005 Speedo Junior Nationals, Irvine, n = 57).

The 1500-meter race requires swimmers to complete 30 (50-meter) laps, or 15 pairs of laps. Each lap-pair consists of one 50-meter lap in which the participant swims away from the finish line (difficult-to-visualize goal) and another 50-meter lap in which the participant swims toward the finish line (easy-to-visualize goal). For each of the 15 lap-pairs, we computed the differences in swim times between the lap that is 50 meters away and the lap that is 50 meters toward the finish line and used this difference score (difficult – easy) in seconds as our dependent measure. We excluded one Olympic swimmer (from 2004) because this participant's difference score was more than three standard deviations from the mean. The Olympic data include the remaining 68 swimmers. For the sectional competitions, we had data for 348 swimmers. We excluded 29 swimmers, of these, 25 swimmers had difference scores that were more than three standard deviations from the mean, and data for 4 swimmers were incomplete (indicating that they may not have completed the race). The sectional data include the remaining 319 swimmers. For a conservative test, we also excluded the first and last lap-pairs (1 and 15) from the analysis because these difference scores were more than three standard deviations from those for the remaining lap-pairs. Inclusion of these two lap-pairs leads to stronger results, which we report in the Web Appendix (see http://www.marketingpower.com/jmmarch11).

As swimmers get tired, they should take longer to complete successive laps. Thus, the (difficult – easy) difference should be negative when the lap with easy visualization follows the lap with difficult visualization. However, the effect of visualization should counter this fatigue effect, that is, swimmers should take less time to complete the lap when they can easily visualize the goal, leading to a positive (difficult – easy) difference. Consistent with H_1, we expect the beneficial effects of ease of visualization to be stronger in later parts of the race.

Results

We analyzed the difference in swim times (difficult – easy) using a mixed model regression, treating lap-pair (2–14) as a continuous within-subject variable that indicates goal distance, with larger numbers representing a closer goal We treated competition level (Olympics, sectionals) as a between-subjects factor The effects of competition level and the goal distance × competition level interaction were not significant ($F < 1$) Figure 1 shows the effects of visualization and goal distance on effort Consistent with H_1, we find a significant, positive effect of goal proximity, indicating that the (difficult – easy) difference became more positive as swimmers approached the goal ($b = 0084$, $F(1, 4642) = 22\ 70$, $p <$ 0001) A negative intercept reveals a significant effect of fatigue, with people swimming the first lap slower than the second one ($M_{difficult - easy} = -1119$, $F(1, 385) = 52\ 86$, $p <$ 0001)

We split the race into parts to test the effect of visualization on effort across three discrete stages (see Table 1) We ran a repeated measures analysis of variance (ANOVA) with the difference in swim times (difficult – easy) as the dependent variable, stage as a discrete three-level within-subject variable, and competition level as a two-level between-subjects variable Neither competition level nor the stage × competition level interaction was significant ($F < 1$) However, the main effect of stage was significant ($F(2, 770) = 11\ 53, p <$ 0001) The effect of visualization was significantly greater in Stage 3, when the goal was near ($M_{difficult - easy} =$ 009), than in Stage 2 ($M_{difficult - easy} = -053$, $F(1, 770) = 18\ 32$, $p <$ 0001) and Stage 1 ($M_{difficult - easy} = -053$, $F(1, 770) = 16\ 89$, $p <$ 001), when the goal was far The effect of visualization was no different across Stages 1 and 2 ($F < 1$) These categorical results provide additional support for H_1

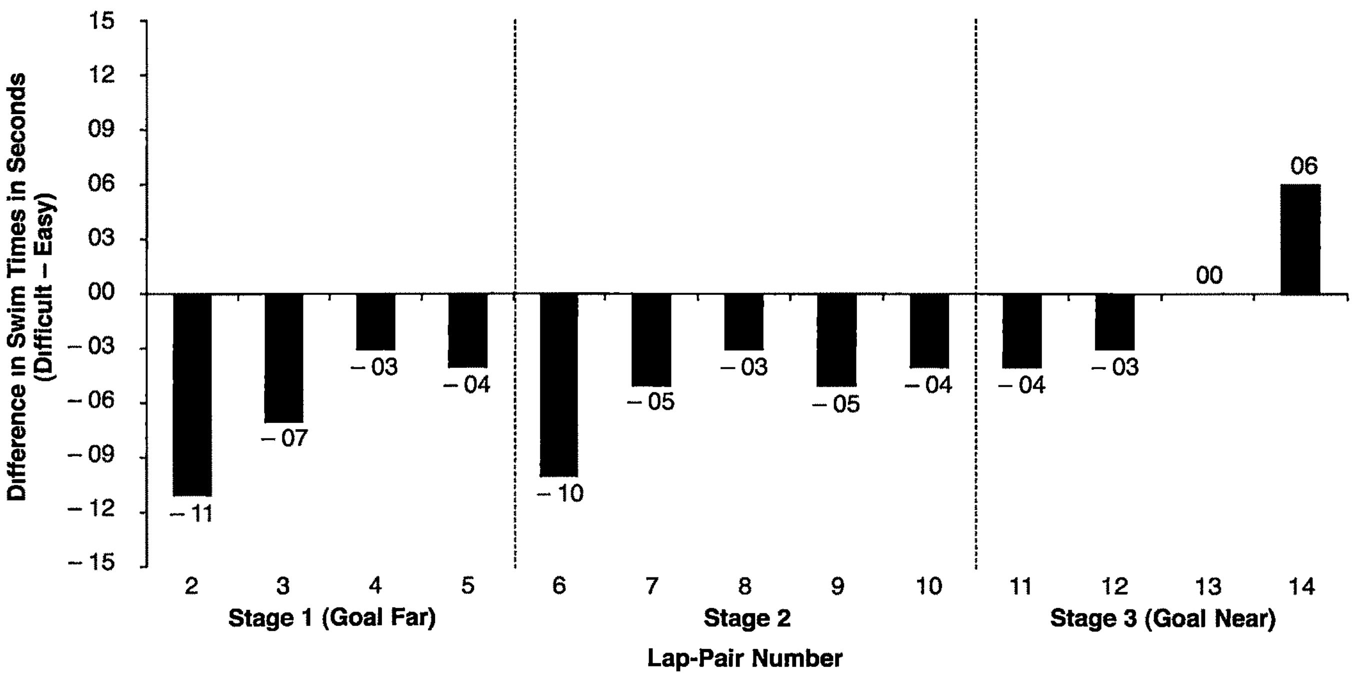
Discussion

We analyze differences in swim times to study contingent effects of goal proximity and goal visualization on effort As we expected, participants swim the 50-meter lap away from the finish line faster than they do the 50-meter lap toward the finish line (owing to fatigue) However, the difference in times between swimming away from and swimming toward the finish line decreases as the finish line approaches These results show that the beneficial effect of goal visualization increases effort as people approach their goal

The analyses suggest that the results are not an outcome of swimmers exerting a consistently increasing rate of effort as they near the goal (independent of visualization) We conducted a mixed model regression with difference in times between a lap toward the finish (easy to visualize) and a *subsequent* lap away from the finish (difficult to visualize) as the dependent measure We treated lap-pair (2–14) as a continuous within-subject variable and competition level (Olympics, sectionals) as a between-subjects factor The intercept indicates that people take less time to swim toward the finish than away from it ($M_{easy - difficult} = -17$ seconds, $F(1, 385) = 41\ 87$, $p <$ 0001) If effort increased, participants would have taken less time to swim the latter 50-meter lap We report additional analyses and rule out alternative explanations in the Web Appendix (see http //www marketingpower com/jmmarch11)

In summary, the results from the multiple-lap swimming competitions reveal the effects of effort that people

FIGURE 1
Study 1: Plot of Visualization Increasing Effort as the Goal Draws Near



Notes Positive difference scores (difficult – easy) suggest beneficial effects of visualization

TABLE 1
Study 1: Effect of Visualization on Effort Across Three Discrete Stages

Stage	Lap-Pair Number	Time (Difficult – Easy) Seconds	Average Per Stage (All Lap-Pairs)	Average Per Stage (Without Laps 1 and 15)
1 (goal far)	1	–2 39	– 48	– 05
	2	– 11		
	3	– 07		
	4	– 03		
	5	– 04		
2	6	– 10	– 05	– 05
	7	– 05		
	8	– 03		
	9	– 05		
	10	– 04		
3 (goal near)	11	– 04	25	01
	12	– 03		
	13	00		
	14	06		
	15	1 23		

Notes A positive difference score (difficult – easy) indicates a beneficial effect of visualization, with relatively longer swim times away from the finish line (difficult-to-visualize goal) than toward the finish line (easy-to-visualize goal) We excluded lap-pairs 1 and 15 because the difference times are three standard deviations or more from those of the remaining lap-pairs (including these strengthens support for H_1) Analyzing swimming times after dividing the lap-pairs into three stages also supports our hypotheses Some arithmetic averages may not exactly match the lap-pair times because of rounding errors

exert under different levels of visualization Although the form of representation did not vary between different sections of the laps, the ability to visualize the finish did In Study 2, we attempt to replicate the effects of ease of visualization in a laboratory setting

Study 2: Effect of Visualization on Effort Exerted in the Lab

Participants, Method, and Design

Seventy-nine undergraduate students participated in the study for course credit To ensure that participants were motivated to exert effort, we told them that the objective of the study was to assess their likelihood of success in academic, social, and athletic domains A pretest revealed that success in these domains was important to participants Participants read that persistence influences people's likelihood of success in these domains and that the purpose of the study was to measure persistence through the ability to exert sustained effort Participants familiarized themselves with a handgrip dynamometer (a gauge that records force exerted in newton) and were asked to exert as much force as they could at a consistent level for 130 seconds (130 seconds correspond to 4 33 rotations of the watch hand on a 30-second stopwatch)

We manipulated ease of visualization between subjects Half the participants (easy-to-visualize condition) saw a horizontal bar on a computer screen that filled in as time elapsed (labeled "start" and "finish", see the Appendix) We expected that this visual representation would help participants visualize the end goal The remaining participants (difficult-to-visualize condition) saw a 30-second stopwatch that showed time progress Given the 130-second duration of the task, visualizing the finish was difficult for participants in this condition Although participants saw an image of the clock, the representation format did not facilitate goal visualization Furthermore, we held progress information constant across the conditions In the easy-to-visualize condition, the bar filled incrementally each second, and in the difficult-to-visualize condition, the stopwatch updated each second

The average force exerted in each of the 26 five-second intervals served as our dependent measure The study used a mixed design, in which we manipulated visualization (easy, difficult) between subjects and used the 26 five-second time intervals as measures of goal distance within subjects All participants completed process measures after completing the task Participants rated doing well in the task to be important (1 = "not at all," and 9 = "very important", M = 7 04) We excluded two people who reported that the task was not important (choosing 1 or 2 on the scale, more than three standard deviations from the mean) and one participant whose effort declined at a rate that was more than three standard deviations faster than the mean rate (which suggests that the person took his or her hand off the dynamometer) Thus, all analyses include 76 participants We excluded the first and last five seconds of the 130-second task because of excessive variability introduced by the recording procedure (in some cases, the recording timer differed by one to two seconds), consistent with Study 1's analyses This method provided data for 24 five-second intervals

We expected the decline in effort over time to be less steep for participants in the easy-to-visualize condition than for those in the difficult-to-visualize condition We also expected the effect of visualization to be stronger as participants neared the goal

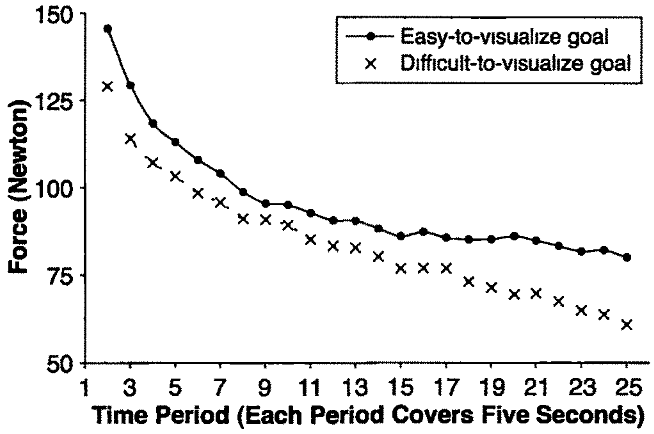
Results

We analyzed effort expended using a mixed model regression, treating the period (2–25) as a continuous within-subject variable that indicates goal distance and goal visualization (easy, difficult) as a two-level between-subjects factor. This analysis revealed a significant period × visualization interaction (F(1, 1746) = 8.44, $p < .005$), in support of H_1 (see Figure 2, Panel A). As participants approached the goal, effort declined more steeply for those in the difficult-to-visualize goal condition (b = –.31, t(1746) = –2.91, $p < .005$).

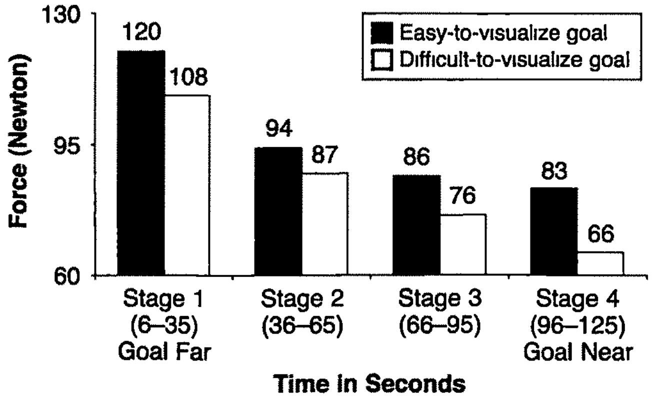
We also split the 24 five-second intervals into four 30-second stages (see Figure 2, Panel B). We measured decline in effort through the difference in average effort between successive stages. We ran three individual ANOVAs, with decline in effort from Stages 1 to 2, 2 to 3, and 3 to 4, respectively, as the dependent measures and visualization as the predictor. Visualization did not significantly affect decline in effort from Stage 1 to Stage 2 (F(1, 74) = 1.90, n.s.) or from Stage 2 to Stage 3 (F(1, 74) = 2.10, n.s.). However, effort from Stage 3 to Stage 4 declined less when the finish was easy to visualize (M_{easy} = 3.32 vs. $M_{difficult}$ = 9.94 newton, F(1, 74) = 6.44, $p = .01$). A repeated measures ANOVA with decline in effort across successive stages as three repeated measures for each participant revealed a significant stage × visualization interaction (F(2, 148) = 5.34, $p < .01$).

FIGURE 2
Study 2: Ease of Visualization Elicits Greater Effort as the Goal Draws Near

A: Average Force Exerted in Each Five-Second Time Interval



B: Average Force Exerted in Each Stage



Discussion

In Study 2, we contrast the easy-to-visualize condition (using a bar indicating the finish) with the difficult-to-visualize condition (using a 30-second stopwatch). Given the 130-second duration of the task, visualizing the finish was difficult in the stopwatch condition (4.33 rotations). As in Study 1, progress information was available in both conditions. We find that the beneficial effect of goal visualization is enhanced when people are near the goal, in support of H_1.

Study 2's results suggest that goal proximity is an important moderator; specifically, the beneficial effects of goal visualization are enhanced when people are near the goal compared with when they are farther away. Together, Studies 1 and 2 demonstrate the effect of ease of visualization on performance when people are near the goal. Thus, managers can use this information to enhance effort expended by employees (e.g., to meet a deadline) or consumers (e.g., to complete a multiple-page online survey) by increasing the ease of goal visualization as they approach the finish. Ease of visualization could be enhanced by graphic representations of progress (progress bars that fill in) as people approach the finish. In Study 3, we use a scenario to investigate whether ease of visualization influences commitment to save money.

Study 3: Visualization and Commitment: Moderating Role of Goal Distance

Participants, Method, and Design

We asked 183 undergraduate students to participate in the study as part of a research requirement. Participants read a scenario in which they are saving for a vacation to Europe coming up in July. Participants read that after buying a plane ticket in February, they decided to save approximately $750 for hotel, food, and sightseeing expenses. It is now April, and they are evaluating their savings. We manipulated the amount of current savings to be low or high between subjects. Half the participants read that they had currently saved $225 (goal far), and the other half read that they had saved $525 (goal near). All participants read these dollar amounts, but we manipulated ease of goal visualization between subjects. Participants in the easy-to-visualize condition saw a visual representation of a bar anchored by $0 and $750 that was shaded either 30% (goal far) or 70% (goal near) (see the Appendix). Participants in the difficult-to-visualize goal condition read textual information. These participants read that they had saved either 30% (goal far) or 70% (goal near) of the required amount.

Thus, the study used a 2 (goal distance: far, near) × 2 (goal visualization: easy, difficult) between-subjects design. All participants then completed a scale that measured their saving commitment, which we adapted from Wright and Kacmar (1994): "difficult to take goal seriously" (reversed), "unrealistic to reach" (reversed), "don't care if I achieve" (reversed), "I'm strongly committed to pursue," "won't take much to make me abandon" (reversed), and "not much to be gained by trying to achieve" (reversed) (1 = "strongly disagree," and 7 = "strongly agree") We averaged the items to form the commitment score (α = 81)

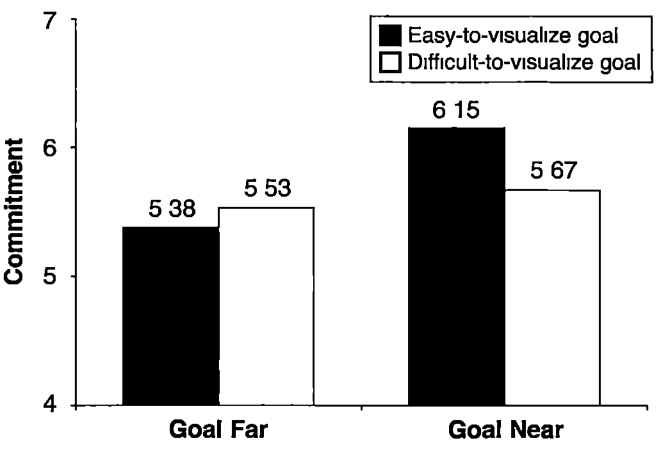
Pretest

We conducted a separate survey to check whether our manipulation of goal distance and ease of visualization influences distance perceptions We paid 104 participants a token amount to complete a survey Four participants did not complete the survey and were excluded, all results are for 100 participants In the survey, participants read a scenario that manipulated goal distance (far, near) and goal visualization (easy, difficult) for the vacation savings task Instead of the commitment scale, however, all participants reported how much more they needed to save to reach their savings goal (1 = "a small amount," and 7 = "a large amount") A significant main effect of goal distance (F(1, 96) = 79 90, $p <$ 0001) emerged, suggesting that those far from the goal believed that the goal was farther than those near the goal ($M_{\text{goal far}}$ = 5 17 vs $M_{\text{goal near}}$ = 3 40) A significant goal distance × visualization interaction also emerged (F(1, 96) = 12 98, $p <$ 001) For participants near their goal, those in the easy-to-visualize condition judged it to be closer (reported that they needed to save less) (M_{easy} = 2 89 vs $M_{\text{difficult}}$ = 3 96, F(1, 96) = 15 68, $p <$ 0005) In contrast, visualization did not significantly affect perceived distance to the finish for those far from the goal (M_{easy} = 5 33 vs $M_{\text{difficult}}$ = 5 00, F(1, 96) = 1 42, n s) In the main study, we test whether visualization influences commitment

Results

An ANOVA with savings commitment as the dependent measure and goal distance and ease of goal visualization as the independent variables reveals a significant distance × visualization interaction (F(1, 179) = 4 90, $p <$ 05), in support of H_1 (see Figure 3) For participants near the goal, those in the easy-to-visualize condition reported significantly greater commitment than those in the difficult-to-visualize condition (M_{easy} = 6 15 vs $M_{\text{difficult}}$ = 5 67, F(1, 179) = 5 71, $p <$ 05) In contrast, visualization did not affect commitment for participants far from the goal (M_{easy} = 5 38 vs $M_{\text{difficult}}$ = 5 53, F(1, 179) = 56, n s) The main effect of goal distance was significant, participants closer to the goal reported greater commitment ($M_{\text{goal far}}$ = 5 46 vs $M_{\text{goal near}}$ = 5 91, F(1, 179) = 10 09, $p <$ 005)

FIGURE 3
Study 3: Ease of Visualization Increases Commitment for People Near the Goal



Discussion

Prior research has shown that goal commitment is a good predictor of goal pursuit (Wright and Kacmar 1994) In Study 3, we find that goal distance moderates the effect of visualization on commitment, suggesting that for people near the goal, those in the easy-to-visualize condition exert greater effort than those in the difficult-to-visualize condition We note that regardless of condition, all participants read textual information about the precise dollar amount saved This provides a conservative test of the effects of visualization Although all participants knew how much they had saved, those in the easy-to-visualize condition judged the goal to be closer and were more committed to reaching it than those in the difficult-to-visualize condition

Bank managers and financial consultants can use these findings to influence consumer spending and savings Savings commitment might be greater if bank managers set savings goals for consumers at the outset and then use graphic representations to enhance visualization ease (e g , a pie chart, a piggy bank that fills up) as the goal approaches In Study 4, we explore whether progress perceptions mediate the effect of visualization on goal pursuit

Study 4: Progress Perceptions Mediate the Effect of Visualization

Participants, Method, and Design

We asked 140 undergraduate students to participate in this scenario-based study, either as part of a research requirement or for a token payment Responses did not differ between the two groups despite compensation differences, so we pooled them The scenario indicated that participants were trying to install photo-editing software on their computer This software could help them edit pictures before printing When purchasing the software, participants had expected the software to be compatible with their computer However, they found that additional drivers needed to be installed for the software to work These drivers were available on the vendor's Web site, and participants needed to contact the vendor to gain access to the drivers

Participants read that they had intended to contact the vendor for some time but had not gotten around to doing so The deadline for returning the software had passed, and participants did not want the purchase to be wasted They then read that they were planning to go home soon for break, which would be a good time to give the printed pictures to their family It is Friday evening, and they log on to the vendor's Web site to find the drivers They click on a "chat" button to begin a text conversation with a service agent A message informs them that the wait to reach a representative is 13 minutes.

We manipulated the ease of visualizing the goal (of reaching an agent) and goal distance between subjects. Half the participants saw a visual representation of a shaded bar, and the remaining participants were informed about the number of minutes they had been waiting. In the goal-far conditions, participants in the easy visualization condition saw a bar that was shaded 23%, and those in the difficult visualization condition received the corresponding wait time in minutes (three minutes; see the Appendix). In the goal-near conditions, the bar was shaded 77% in the easy visualization condition, and the corresponding wait time presented in the difficult visualization condition was ten minutes. In summary, the study used a 2 (visualization: easy, difficult) × 2 (goal distance: far, near) between-subjects design.

For a persistence measure, all participants reported how likely they were to continue waiting to reach an agent (1 = "not at all," and 7 = "very likely"). On the next page, participants reported perceptions of goal progress (how much progress they had made toward reaching an agent; 1 = "very little," and 7 = "a lot of progress"). Reaching the service agent was important for participants (1 = "not at all," and 7 = "very important"; M = 5.62), as confirmed by a t-test comparing this reported value with the scale midpoint of 4 (F(1, 139) = 262.44, $p < .0001$).

Results

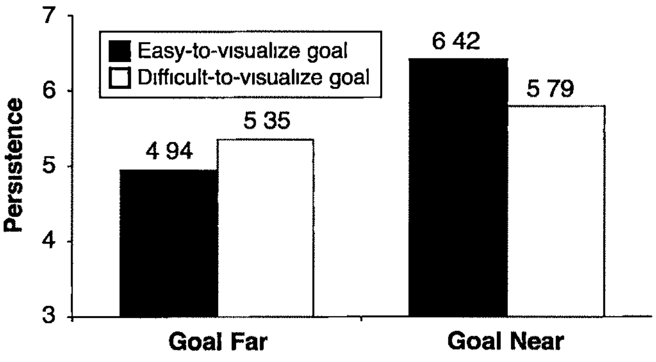
Persistence. An ANOVA with likelihood of waiting (persistence) as the dependent measure and goal distance and ease of visualization as the independent variables revealed a significant distance × visualization interaction (F(1, 136) = 5.54, $p < .05$), in support of H_1 (see Figure 4, Panel A). For participants near the goal, those in the easy-to-visualize condition were more likely to persist than those in the difficult-to-visualize condition ($M_{\text{easy}} = 6.42$ vs. $M_{\text{difficult}} = 5.79$, F(1, 136) = 4.04, $p < .05$). In contrast, visualization did not affect persistence for participants far from the goal ($M_{\text{easy}} = 4.94$ vs. $M_{\text{difficult}} = 5.35$, F(1, 136) = 1.74, n.s.). The main effect of goal distance was significant; participants near the goal reported greater persistence ($M_{\text{goal far}} = 5.14$ vs. $M_{\text{goal near}} = 6.11$, F(1, 136) = 19.10, $p < .0001$).

Goal progress. An ANOVA with perceived goal progress as the dependent measure and goal distance and ease of visualization as the predictors revealed a distance × visualization interaction (F(1, 136) = 15.35, $p < .0005$; see Figure 4, Panel B). For participants near the goal, those in the easy-to-visualize condition believed that they had made more progress than those in the difficult-to-visualize condition ($M_{\text{easy}} = 5.42$ vs. $M_{\text{difficult}} = 4.76$, F(1, 136) = 7.90, $p < .01$). In contrast, ease of visualization decreased progress perceptions for people far from the goal ($M_{\text{easy}} = 3.31$ vs. $M_{\text{difficult}} = 3.94$, F(1, 136) = 7.51, $p < .01$). The main effect of goal distance was significant; people near the goal reported greater progress ($M_{\text{goal far}} = 3.61$ vs. $M_{\text{goal near}} = 5.10$, F(1, 136) = 79.76, $p < .0001$).

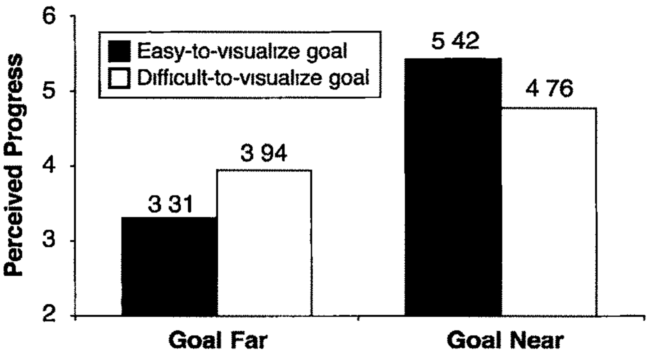
Mediation. We find that progress perceptions completely mediate the effect of ease of visualization on persistence (Sobel z = 3.54, $p < .0005$). As we discussed previously, an ANOVA with persistence as the dependent measure and goal distance and ease of visualization as the independent variables revealed a significant distance × visualization interaction (F(1, 136) = 5.54, $p < .05$). When we added goal progress as a predictor in this model, the distance × visualization interaction was nonsignificant (F(1, 135) = .01, n.s.). However, the effect of goal progress on persistence remained significant (F(1, 135) = 68.84, $p < .0001$).

FIGURE 4
Study 4: Ease of Visualization Increases Persistence and Progress Perceptions for People Near the Goal

A: Persistence (Willingness to Wait)



B: Perceived Progress (Proximity to the Goal)



Discussion

Study 4's results support H_1 and demonstrate the mediating role of goal progress. For participants far from the goal, those in the easy-to-visualize condition perceived the goal as farther (reported less progress) than those in the difficult-to-visualize condition. Because participants reported perceptions of progress, those who saw the visual representation may have judged the start as closer than those who saw the textual representation. This is consistent with distance perception effects that Lappe, Jenkin, and Harris (2007) report.

Thus, not only can managers increase persistence of people waiting online for an agent by showing a visual representation when they are close to reaching the agent, but they can also increase progress perceptions. Another application includes managing perceptions of wait times as Web pages load in a browser, in which progress bars could increase users' persistence and decrease perceptions of loading time Next, we investigate how framing a goal in a consolidated manner or splitting it into subgoals influences the relationship between visualization and goal pursuit We also measure differences in levels of construal to examine whether construal presents an alternative explanation for our expected results

Study 5: Effect of Visualization and Goal Framing on Effort

Participants, Method, and Design

One hundred fifty-four undergraduate students completed a computerized sales study as part of a research requirement Participants were told that the study simulates a sales competition in which they need to complete 20 sales Each sale follows a 12-step process, with every step represented by one click of the mouse button Thus, participants require 240 clicks to complete the 20 sales Participants were informed that their goal was to sell to 20 consumers as quickly as possible The top three performers would win cash prizes of $50, $25, and $20, respectively Using clicks as a proxy for effort is consistent with computerized study designs (e g , Shin and Ariely 2004, Srivastava and Lurie 2001) We excluded 13 participants whose completion times were more than three standard deviations from the mean Thus, all analyses are for the remaining 141 participants

We manipulated ease of visualization between subjects Half the participants, who were in the easy visualization condition, saw a visual representation of a bar that filled in as they completed the sales The remaining participants, those in the difficult visualization condition, saw a numerical representation that depicted the percentage of 20 sales completed thus far We also manipulated the framing of the goal between subjects Half the participants, who were in the subgoal condition, read that the 20 sales were broken into four groups of 5 sales each for ease of tracking The remaining participants, those in the consolidated goal condition, were not given this information Note that the visual representation (bar) for participants in the subgoal condition depicted their progress for 5 sales and then reset for the next group of 5 sales (see the Appendix) To summarize, the study was a 2 (visualization easy, difficult) × 2 (goal framing consolidated, subgoals) between-subjects design with random assignment The dependent measure was the time participants took to complete the 20 sales

We used the Qualtrics survey program to unobtrusively record the time participants took to complete each of the 12 steps for a sale, repeated over 20 sales We excluded Step 1 of the first sale because in this step, participants read study instructions Across 141 participants, this amounted to 33,699 time measurements Approximately 2 7% of the time measures (in other words, approximately 6 of the 239 times for each participant) were not captured by the program We analyzed the time taken to complete 20 sales in three ways (1) the sum of captured times (not including the missing data), (2) the sum of captured times, in which we substituted each missing time by the average time participants took to complete a step for that set of 5 sales, and (3) log-transformed times Because the results of these analyses were identical, we report the results of the first analysis (i e , using only the actual captured times)

Results

Moderating effect of goal framing An ANOVA with completion time as the dependent measure and ease of visualization and goal framing as the independent variables reveals a significant main effect of goal framing (see Figure 5) Participants who had a consolidated goal completed the 20 sales faster than those whose 20 sales were split into four subgoals ($M_{consolidated} = 231$ seconds vs $M_{subgoals} = 262$ seconds, $F(1, 137) = 9\ 31, p < 005$) The visualization × goal framing interaction was also marginally significant ($F(1, 137) = 2\ 95, p < 10$) The effect of goal framing was significant when the goal was easy to visualize ($M_{consolidated} = 215$ seconds vs $M_{subgoals} = 266$ seconds, $F(1, 137) = 10\ 69$, $p < 005$) but not when the goal was difficult to visualize ($M_{consolidated} = 245$ seconds vs $M_{subgoals} = 259$ seconds, $F(1, 137) = 95$, n s)

Planned contrasts revealed that in the consolidated goal condition, ease of visualization led to significantly faster sales ($M_{easy} = 215$ vs $M_{difficult} = 245$, $F(1, 137) = 4\ 12, p < 05$) In contrast, ease of visualization did not affect time taken to complete sales for participants with subgoals ($M_{easy} = 266$ seconds vs $M_{difficult} = 259$ seconds, $F(1, 137) = 18$, n s), in support of H_2 We next focus on the consolidated goals condition, which we used in the preceding studies (for results of the subgoals condition, see the Web Appendix [http //www marketingpower com/jmmarch11])

Goal proximity Figure 6, Panel A, shows the time participants in the consolidated goal condition took to complete the 20 sales We analyzed time taken to complete the 20 sales as repeated measures for each participant, using a continuous time variable (1–20) to indicate goal proximity and a two-level indicator for goal visualization (easy, difficult) This analysis revealed a significant proximity × visualization interaction ($F(1, 1385) = 4\ 25, p < 05$), in support of H_1 As participants approached the goal, those in the easy-to-visualize condition completed sales faster than

FIGURE 5
Study 5: Ease of Visualization Speeds Goal Achievement for Consolidated Goals

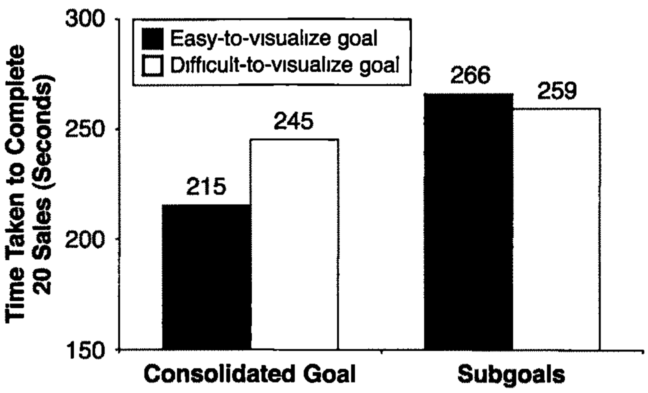
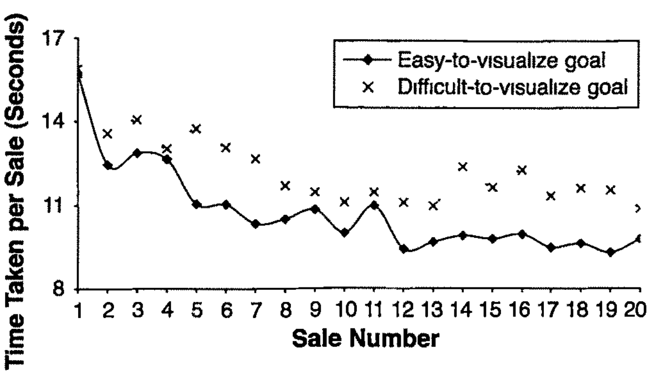
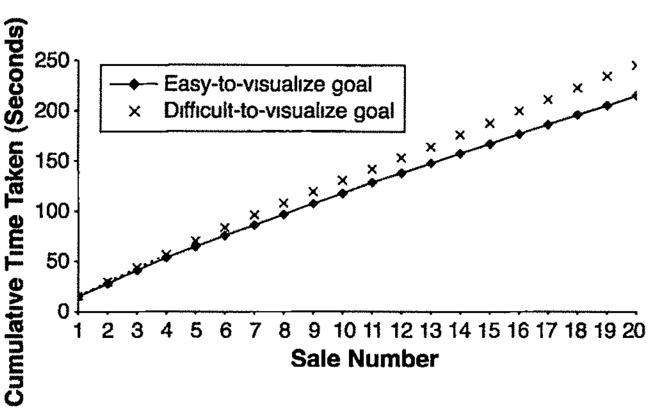


FIGURE 6
Study 5: Ease of Visualization Increases Effort for Consolidated Goals as People Approach the Goal

A: Time Taken to Complete Each Sale



B: Cumulative Time Taken



those in the difficult-to-visualize condition ($b = -05$, $t(1385) = -2 06, p < 05$) The main effect of goal proximity was significant, with participants speeding up as they approached the end of the task ($F(1, 1385) = 260 95, p < 0001$)

In the consolidated goal condition, we also analyzed the data by dividing the 20 sales into four stages and measuring time taken to complete each stage (seconds) The results show that the strength of the effect of visualization (easy, difficult) was not significant in Stage 1 ($M_{easy} = 64 74$ seconds vs $M_{difficult} = 70 26$ seconds, $F(1, 213) = 1 90, p = 17$), was marginally significant in Stage 2 ($M_{easy} = 52 65$ seconds vs $M_{difficult} = 59 86$ seconds, $F(1, 213) = 3 24, p = 07$) and Stage 3 ($M_{easy} = 49 78$ seconds vs $M_{difficult} = 57 48$ seconds, $F(1, 213) = 3 69, p = 06$), and was strongest and significant in Stage 4 ($M_{easy} = 48 16$ seconds vs $M_{difficult} = 57 59$ seconds, $F(1, 213) = 5 57, p = 02$)

The cumulative effect of faster sales led participants in the easy-to-visualize condition to complete the task significantly faster than those in the difficult-to-visualize condition (average sale completion time $M_{easy} = 10 77$ seconds vs $M_{difficult} = 12 26$ seconds, $t(71) = -2 06, p < 05$) Figure 6, Panel B, shows this effect

Discussion

Study 5 extends our research in three ways First, it demonstrates the effect of ease of visualization and goal proximity for a paid task, in which participants had a financial incentive to perform well In such a setting, we replicate the facilitating effect of visualization as a person approaches a consolidated goal Second, this study helps us counter an alternative explanation based on construal-level theory, as we discussed previously That is, a concrete (easy-to-visualize) representation leads people to adopt an implemental mindset, which may enhance goal pursuit compared with when representation is abstract (McCrea et al 2008) To test for this explanation, we used a 19-item version of the behavior identification form (BIF, Vallacher and Wegner 1989) that Liberman and Trope (1998) use, which captures people's construal level We presented participants with 19 actions (e g , locking a door) and asked them to choose one of two options One option was a low-level action corresponding to a concrete construal (putting a key in a lock), and the other was a high-level action corresponding to an abstract construal (securing a house) We coded the low-level construal as 0 and the high-level construal as 1 and summed across the 19 actions to create a construal score ranging from 0 to 19, with larger scores indicating higher construal (the BIF instrument appears in the Web Appendix [http //www marketingpower com/jmmarch11]) An ANOVA with construal score as the dependent measure and visualization and goal framing as predictors elicited no significant effects ($F < 1$), suggesting that our manipulations did not influence the construals Although we found no significant effect of visualization ease on the BIF, we acknowledge the limitation that changes in construal of the sales task may not have been significant enough to influence the 19-item measure

Third, we found that the effect of visualization was significant for consolidated goals but not for subgoals, thus identifying an important boundary condition for our results For participants in the easy-to-visualize condition, those provided with the 20 sales as a consolidated goal did better than those whose 20 sales were split into four subgoals of 5 sales This is consistent with the resting-on-laurels phenomenon that Amir and Ariely (2008) describe

General Discussion

In summary, this research strives to make four significant contributions First, from a theoretical standpoint, we demonstrate that ease of visualization enhances goal pursuit when people near their goal Second, we identify the underlying process—that is, ease of visualization enhances perceptions of proximity and goal progress, increasing effort expended We find this phenomenon in real-world settings and replicate the effects in the laboratory In Study 1, data from 1500-meter Olympic and sectional swimming competitions reveal that in the later part of the race, people take longer to swim away from the finish line (when the goal is difficult to visualize) than to swim toward the finish line (when the goal is easy to visualize) In Study 2, we measure people's ability to exert sustained effort in the lab Although the force exerted declines over time (owing to fatigue), this decline is less steep when the goal is easy to visualize than when it is difficult to visualize

Third, we demonstrate implications of goal visualization in the marketing-relevant contexts of consumer savings, service settings, and a sales task In Study 3, we show that ease of visualization increases commitment to save money for people near the goal but not for those far from the goal, even though all participants received precise information about the dollar amounts saved Study 4 finds that among the people close to reaching a service agent, those who can easily visualize the finish are more likely to persist than those who find the finish difficult to visualize Furthermore, perceptions of progress mediate the effect of visualization on persistence Because goals are also important in managerial contexts, such as in the setting of sales goals, in Study 5 we show that these results replicate in such applied contexts

Fourth, we identify boundary conditions for these effects Study 5 finds beneficial effects of visualization for consolidated goals but not for subgoals Thus, in the context of a sales competition, ease of visualization is likely to engender greater effort from salespeople when they are close to their sales goal and when the goal is presented in a consolidated manner

Goal Representations

We draw from research on distance perceptions to predict how ease of visualization affects distance perceptions and, consequently, effort and commitment, but this relationship could be somewhat tenuous In the context of physical distance perceptions, the destination is the real goal Seeing the destination provides real progress information, and the influence of destination visibility on effort and commitment is transparent However, in our contexts, participants are aware that the visually depicted end point is a mere proxy for the real goal and that a visual representation should provide little, if any, additional information compared with other forms of representation The influence of ease of visualization on distance perception and effort in this context of goals is less obvious than that in the context of physical distance judgments Nonetheless, research in the realm of physical distance perceptions provides a good starting point to infer how goals in general might be interpreted Furthermore, our results suggest that people process visual representations in a manner similar to distance, influencing perceptions of proximity and effort In Study 3, we find these influences even after all participants received textual progress information

Boundary Conditions

We study the effect of visualization in the domain of goals that have fixed start and end points A specific start and finish are necessary for the goal-gradient effect and for increasing focus on the finish, in contrast with ongoing goals, such as studying, saving, or improving fitness (Zhang, Fishbach, and Dhar 2007)

We find that the beneficial effects of visualization increase as people near a goal Prior research suggests that as people approach their goal, their attention on the goal increases In such a setting, we find that easy-to-visualize goals elicit greater effort than difficult-to-visualize goals This conclusion is not as obvious as it might appear, because temporal construal theory suggests that psychological proximity perceptions engender a more concrete mindset and enhance performance (McCrea et al 2008) Therefore, ease of visualization, which increases proximity perceptions, should have the strongest effect on distant goals As people near their goals, the actual distance decreases, and therefore the beneficial effect of visualization should also be lower However, we do not find support for this explanation in Study 5 This may be because beneficial effects of visualization occur only when people focus on the goal, and people focus on the goal only when it is proximal

Furthermore, the beneficial effects of visualization on goal pursuit may attenuate if attention on the goal weakens For example, when people have simultaneous competing goals, those who believe they are close to the goal may decrease effort to reach that goal and increase efforts toward a conflicting goal (Shiv and Fedorikhin 1999) Although we find the benefits of visualization when we represent goals unitarily (by showing participants a visual representation of the start and finish), dividing the intervening distance into subgoals attenuates the effect of visualization, consistent with the resting-on-laurels effect (Amir and Ariely 2008) These dimensions of goal representations (decreasing attention to the goal) may provide useful boundary conditions for the effort-enhancing effects of visualization we found herein

Implications

Process versus outcome Extant research reveals that mental simulation enhances goal pursuit (Pham and Taylor 1999) This stream of research suggests that mentally simulating the process (e g , imagining studying for an upcoming exam) affects goal pursuit more favorably than when outcomes are simulated (e g , imagining getting a good grade on the exam) In this extant research, outcomes were conceptualized differently from the process and, in a sense, abstracted away from it That is, rather than viewing the outcome as finishing studying for the test quickly, the outcome refers to doing well on the exam In our research, the goal involved finishing the process task Consequently, our findings suggest that visualizing the end point of the process task likely enhances goal following Thus, our research suggests that mentally simulating the end point of a process task, a form of outcome, also enhances goal following, extending Pham and Taylor's (1999) findings

Athletic performance Across five studies, we find that goal proximity increases the beneficial effects of goal visualization on commitment and effort These results suggest that athletic performance could be improved by making the finish line visible (or easier to visualize), especially in the second half of the race Sports officials who want to enhance performance could design facilities that allow such ease of visualization

Individual motivation and effort We find that when people near their goal, being able to visualize the finish increases the effort they exert to reach it This finding has significant implications for motivation and self-control. Specifically, people could enhance motivation by graphically tracking their progress as they approach a goal (e.g., plotting progress from start to finish on a computerized progress chart). Consequently, we expect that as people approach their goal, those who can easily visualize the outcome by using graphical tools judge the finish to be closer and exert greater effort. Visualization can also be enhanced by making the representation consistent with the consumer goal. For dieting consumers, this could be implemented with a wide bar that narrows on approach to the finish goal (suggesting a decrease in consumers' weight).

Furthermore, our findings show that ease of visualization has stronger effects on performance when goals are presented in a consolidated manner than when they are divided into multiple subgoals. Thus, in the context of dieting, ease of visualization should have a weaker effect when a goal (e.g., losing ten pounds) is separated into several subgoals (e.g., losing two pounds in five increments).

Managerial implications. Managers want to enhance both consumer evaluations and employee productivity. In the consumer domain, our findings suggest that using a visual representation (a progress bar or other forms of graphical depictions) when consumers are close to their savings goal could enhance savings, as Study 3 demonstrates. Using vivid proxies of the end goal as finish-line markers can also enhance visualization. For example, managers could use images of dollar bills stacking up in a progress bar or a piggy bank filling up as consumers successfully save. Banks may be able to use such representations to enhance consumer savings. Similarly, not-for-profit firms seeking charitable donations could increase commitment and accelerate the pace of donations by allowing donors to graphically visualize their progress toward a goal as it draws nearer (Cryder, Loewenstein, and Seltman 2010; Koo and Fishbach 2008).

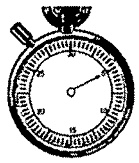
Ease of visualization can also enhance persistence of waiting consumers, as Study 4 demonstrates. Adding progress bars when consumers are waiting online can enhance visualization. Satisfaction with online services that require waiting (e.g., when waiting for a browser page to load) is likely to be greater when perceptions of speed are enhanced with progress bars. These results have important implications in service settings in which wait times often influence consumer evaluations. A rich literature in service research suggests that waiting for service can lead to anger and negatively influence service quality perceptions (Taylor 1994). In instances in which the actual wait time cannot be reduced, influencing consumers' perceptions of wait times may be the only way to affect inferences (Katz, Larson, and Larson 1991). In such contexts, a visual representation can be especially helpful for consumers who have waited the longest (and so are close to reaching a service agent) and are the most infuriated (Taylor 1994). In a bricks-and-mortar context of waiting for service, allowing consumers to see the end of the line (especially when they are close to the finish) may also decrease impatience. This could be implemented by placing multiple lines in parallel.

In employee contexts, our findings suggest that using a visual representation can enhance employee productivity. Specifically, employees are more likely to internalize externally provided goals that they perceive to be attainable rather than unattainable (Naylor and Ilgen 1984). In turn, accepting a goal leads to positive effects on performance. Because easy-to-visualize goals seem more attainable when people are near the goal, firms could motivate employees by providing visual representations of progress in the form of bar or pie charts depicting progress and the amount of the target remaining.

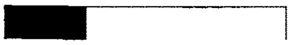
In addition, certain goals may be easier to visualize than others. For example, asking salespeople to sell to 20 clients as quickly as possibly may be easier to visualize than asking them to sell to as many clients as possible (i.e., the goal distance is uncertain). With certain goals, ease of visualization has a stronger influence on performance when a goal is consolidated than when it is split into multiple subgoals, which leads to lower effort. These directions highlight some important consequences when consumers and employees can visualize their goals and therefore remain fruitful avenues for further research.

APPENDIX
Goal Visualization Manipulations

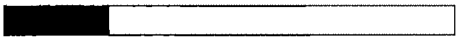
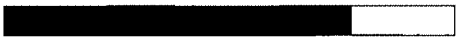
Study 2 (Bar Fills Up Over 130 Seconds vs. 30-Second Stopwatch)

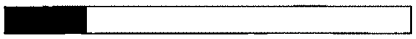
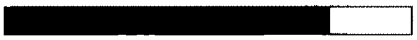
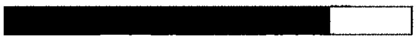
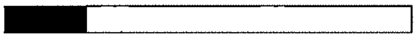
Time	Easy to Visualize	Difficult to Visualize
5 seconds	START FINISH	
65 seconds	START FINISH	
125 seconds	START FINISH	

Study 3 (Shaded Area Shows Amount of Money Saved)

Goal Distance	Easy to Visualize	Difficult to Visualize
Far	$0  $750	30%
Near	$0 $750	70%

APPENDIX
Continued

Study 4 (Shaded Area Shows Time Spent Waiting)		
Goal Distance	**Easy to Visualize**	**Difficult to Visualize**
Far	START  FINISH	3 minutes
Near	START  FINISH	10 minutes

Study 5 (Shaded Area Shows Sales Completed· Consolidated = 20 Sales, Subgoal = 5 Sales)		
Goal Type, Number of Sales	**Easy to Visualize**	**Difficult to Visualize**
Consolidated, 4 sales	START  FINISH	20%
Consolidated, 16 sales	START  FINISH	80%
Subgoals, 4 sales	START  FINISH	80% of Subgoal 1
Subgoals, 16 sales	START  FINISH	20% of Subgoal 4

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Alexander Josiassen

Consumer Disidentification and Its Effects on Domestic Product Purchases: An Empirical Investigation in the Netherlands

Consumers' local bias is an important determinant of domestic product purchase behavior. Because of its importance, authors across various disciplines have investigated this phenomenon using the consumer ethnocentrism model. However, the research reported herein demonstrates that such an approach provides an incomplete picture at best. This research provides an initial test of the consumer disidentification (CDI) construct. In contrast with consumer ethnocentrism, the CDI model predicts that consumers' repulsion toward their domestic country negatively affects the purchase of products made in their domestic country or by domestic firms. The model is tested using survey data from 1534 second-generation immigrants who were born in and live in the Netherlands. Structural equation modeling supports the model and shows that CDI has a significant impact on buying decisions beyond the effect of consumer ethnocentrism. The results further show that for second-generation Turkish immigrants, acculturation and ethnic identification are important predictors of both consumer ethnocentrism and CDI. The article discusses the implications of these findings for research and practice.

Keywords: consumer disidentification, consumer ethnocentrism, consumer affinity, animosity, acculturation, ethnic identification, attraction, repulsion

> I am not an American. There is nothing about me that is American. I don't want to be American, and I have just as much right to be here as any of you. (young Latino in *One America Indivisible* [Hackney 1999, p. 76])

Most members of national subgroups struggle with the question whether to combine their subgroup identity with their national identity (Transue 2007). Such identity clashes may be found among subgroups defined by political views, religion, demographics, interests, values, and attitudes. This disidentification with their national identity creates a social malaise between the dominant group and subgroups and can also increasingly lead subgroups, in the process of creating an entrenched subgroup identity, to actively reject the dominant group.

A particular case is that of immigrants and their struggle to combine their subgroup and national identities. This struggle occurs in settler countries, such as the United States, Canada, Australia, and New Zealand (Freeman 1997), and also affects countries in Europe, which find their demographic makeup changing as a result of immigration. Such profound changes in nations' sociocultural economic fabric are not taking place without friction. Riots in many European countries, such as France, Germany, and the Netherlands (Fassin 2006; Karapin 2002; Klink and Wagner 2006), in recent years illustrate the dramatic and damaging effects that occur when citizens adopt an adversarial stance toward the country in which they live.

If national tension can lead to riots and violence, it is feasible that such a disidentification with the national group also affects consumers' willingness to purchase products produced either in their domestic country or by domestic firms.[1] However, marketing researchers have neglected the challenge of investigating the construct of consumer disidentification (CDI) and its potential impact on consumer behavior. This research gap is of considerable significance. For example, from a strategic perspective, "the international marketing manager has little choice but to include two extrinsic attributes—country of manufacture and brand name—as part of the product bundle" (Klein, Ettenson, and Morris 1998, p. 90). Therefore, managers want to maneuver these product attributes in an attempt to augment consumers' receptivity to their products and achieve a strategic competitive advantage (Aaker 1991; Johansson, Douglas, and Nonaka 1985; Pappu, Quester, and Cooksey 2007). Researchers and firms expend considerable

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[1] The term "domestic country" refers to the country in which the consumer was born and lives.

© 2011, American Marketing Association
ISSN: 0022-2429 (print), 1547-7185 (electronic)

Journal of Marketing
Vol. 75 (March 2011), 124–140

effort to understand consumers' positive "bias towards locally produced products" (Cleveland, Laroche, and Papadopoulos 2009, p 121) by investigating the construct of consumer ethnocentrism (Shimp and Sharma 1987)[2] The current research asserts that such an approach is, at best, likely to render an incomplete picture of local bias–induced consumer behavior

Against this background, the general aim of this research is to investigate whether CDI matters to marketing researchers and managers First, the article provides a conceptual basis for the construct of CDI by integrating work and constructs across the social sciences Second, the article provides an integrative country biases matrix that enables comparison and discrimination of the involved constructs Third, the research offers a reliable and valid CDI scale Fourth, insights are provided regarding the potential for CDI to predict consumers' product-related judgments, willingness to buy, and actual expenditure, purchase, and ownership Fifth, the article investigates acculturation and ethnic identification as possible antecedents in the model[3] To this end, the CDI construct is developed conceptually, and then a series of studies set in the Netherlands empirically investigates the potential effect of disidentification when consumers consider domestic products for purchase and consumption

Conceptual Background and Hypotheses

Introducing CDI

The term "consumer disidentification" is adapted from the general sociological construct of national disidentification (see Verkuyten and Yıldız 2007) National disidentification represents people's reactive and oppositional positions toward the country in which they live (see Ogbu 1993, Portes and Zhou 1993) This article uses CDI to represent consumers' active rejection of and distancing from the perceived typical domestic consumer Consumers with high levels of CDI do not identify with consumers in the country they live in and categorize themselves as different from the majority group Antecedents of CDI range from strong identification with religious, political, ethnic, age, and interest groups to perceived negative stereotypes associated with typical domestic purchase and consumption patterns to perceived rejection and devaluation by the majority group

This research proposes that the construct of CDI—or a consumer's active rejection of and distancing from the perceived typical domestic consumer—affects his or her purchase behavior Specifically, it is proposed that people with high levels of CDI avoid domestic products because they want to disidentify themselves from the typical domestic consumer

Country-Induced Biases: Distinctions and Integration

Researchers (e g , Gurhan-Canli and Maheswaran 2000, Han 1989, Klein, Ettenson, and Morris 1998, Nagashima 1970, Reierson 1967, Schooler 1965, Shimp and Sharma 1987) have documented that some consumers have positive and negative predispositions toward purchasing products because of the country with which they associate the product In general, there are at least two ways the country associated with a product influences consumer choice behavior First, country information influences consumer behavior through the country image (Han 1989, Maheswaran 1994, Verlegh and Steenkamp 1999), which pertains to the effect of information about the product country on consumers' expected product outcomes For example, the consumer may use the country image as a halo to infer product-related outcomes, or his or her expectations may be a result of a sum of experiences with similar products from the same country (Han 1989) Second, as Herche (1992) notes, a consumer can be favorable toward French wine but still decide not to buy it because of a belief that buying French products hurts the domestic economy As Gurhan-Canli and Maheswaran (2000, p 310) assert, "attitudes toward foreign products may be governed by inferences other than those about product quality" The phenomenon that country bias is not related to product quality is "often confused with the [country-image effect] although the two topics are distinct" (Shankarmahesh 2006, p 148)

The most widely used construct to understand the non-quality-based country bias phenomenon is consumer ethnocentrism, which Shimp and Sharma (1987) introduce in their classic article Consumer ethnocentrism is grounded in the general sociological construct of ethnocentrism Ethnocentrism refers to a worldview in which a person views his or her own country as right and superior (Sumner 1906) Consumer ethnocentrism refers to "beliefs held by consumers about the appropriateness and indeed morality of purchasing foreign-made products" (Shimp and Sharma 1987, p 280) The most widely used scale to measure consumer ethnocentrism is the CETSCALE (Shimp and Sharma 1987), which has been validated in a wide variety of countries (e g , Dimofte, Johansson, and Ronkainen 2008, Steenkamp and Geyskens 2006, Steenkamp, Ter Hofstede, and Wedel 1999), including the Netherlands (Nijssen and Douglas 2008) Studies of consumer ethnocentrism find that scores on the CETSCALE are inversely related to consumers' willingness to purchase imports (Herche 1992, Olsen, Granzin, and Biswas 1993, Sharma, Shimp, and Shin 1995) and their judgment of foreign products (Klein 2002, Klein, Ettenson, and Morris 1998, Moon and Jain 2001) The antecedents of consumer ethnocentrism range from nationalism, dogmatism, and patriotism to the country's stage of economic development (Balabanis et al 2001, Shankarmahesh 2006)

Although CDI and consumer ethnocentrism both affect consumers' dispositional responses (Cleveland, Laroche, and Papadopoulos 2009) toward purchasing domestic products, they are discrete constructs.[4] Indeed, research in sociology, anthropology, and psychology (e.g., Cashdan 2001; Larsen, McGraw, and Cacioppo 2001) shows that positive and negative dispositions are distinct. Thus, low consumer ethnocentrism or little commitment to the national category does not necessarily indicate an adversarial stance; rather, it means that aspects of the national category are not strongly connected to or important to a person, but there is neither a requirement nor an expectation of a disconnection of these aspects as there is for CDI (see Kreiner and Ashforth 2004; Verkuyten and Yıldız 2007).

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[2] Studies that contain the phrase "consumer ethnocentrism" and "ethnocentric consumer" were counted in Elsevier's Scopus database This count resulted in 309 articles (105 in both 2007 and 2008) The concept was not the focus of all the identified studies, but its frequent mention illustrates its significance to marketing knowledge

[3] I thank a reviewer for this suggestion

Although nation category attraction and repulsion have a variety of sources, one important source is similarity/dissimilarity. Sociologists (e.g., Byrne 1971; Chen and Kenrick 2002; Newcomb 1956; Rosenbaum 1986) have established that an individual's attraction to or repulsion for a group can be conceptualized in terms of the similarity–attraction model and the dissimilarity–repulsion model. Similarity promotes group attraction, and dissimilarity promotes group repulsion (Chen and Kenrick 2002). Thus, a matrix along the dimensions of attraction/repulsion and domestic/foreign country is useful for understanding the distinction between these important phenomena (see Figure 1). Ethnocentric consumers (Quadrant 1) "reject persons who are culturally dissimilar while blindly accepting those who are culturally like themselves" (Shimp and Sharma 1987, p. 280). Consumers who disidentify with their domestic country group (Quadrant 2) are similarly repulsed by living in a society in which they are dissimilar to the majority of consumers. The stronger the pressure from society to assimilate despite the dissimilarities, the stronger the repulsion and disidentification may become (Verkuyten and Yıldız 2007).

In addition to CDI and consumer ethnocentrism, which are related to products originating in the consumers' domestic country, consumers may harbor product-related dispositions for or against foreign countries. Some consumers are repulsed by certain countries because of "remnants of antipathy related to previous or ongoing military, political, or economic events" (Klein, Ettenson, and Morris 1998, p. 90). This phenomenon is labeled "animosity," and the construct was introduced by Klein, Ettenson, and Morris (1998). Recent research into the animosity construct (Riefler and Diamantopoulos 2007, p. 110) has found that "cultural dissimilarity may be the core reason for consumers expressing a dislike for a foreign country" (Quadrant 4).

Although many researchers (e.g., Adler 1983; Balabanis and Diamantopoulos 2004; Balabanis et al. 2001; Ettenson and Klein 2000; Herche 1992; Kaynak and Kara 2002; Klein 2002; Klein, Ettenson, and Morris 1998; Moon 2003; Ouellet 2007; Sharma, Shimp, and Shin 1995; Shimp and Sharma 1987; Watson and Wright 2000) have conducted empirical investigations of consumer ethnocentrism and animosity in a variety of settings, consumers' attraction to a particular foreign country (Quadrant 3) has only recently been explored (see Oberecker, Riefler, and Diamantopoulos 2008). Consumer affinity refers to a "feeling of liking, sympathy, and even attachment toward a specific foreign country" (Oberecker, Riefler, and Diamantopoulos 2008, p. 26). The sources of consumer affinity span from similarity—for example, in terms of language, culture, political, and economical situation—to personal experience of the country (Oberecker, Riefler, and Diamantopoulos 2008). Figure 1 illustrates how consumer affinity and animosity focus on consumers' attraction to or repulsion toward a specific foreign country rather than the domestic country.

Research Hypotheses

This research provides an initial test of the CDI construct. The proposed model for domestic product purchase suggests that consumer ethnocentrism and CDI predict consumers' willingness to buy, both as a direct relationship and through product judgments. In addition, the model tests whether willingness to buy domestic products is related to ownership of domestic products. The model draws on people's tendency to favor consistent preference systems (see Fishbein and Ajzen 1975). Specifically, people favor, and therefore strive to achieve, consistency among their thoughts, feelings, and actions. Consistent with balance theory (Heider 1958), an imbalanced preference system produces unpleasant tension and a motivation to reduce it. Against this theoretical background, this research suggests that consumers' level of CDI affects their product judgments, willingness to buy, and actual behavior to reduce or avoid any tension that might otherwise arise.

The following hypotheses are derived from the consumer ethnocentrism–disidentification model (see Figure 2).

FIGURE 1
The Consumer Attraction–Repulsion Matrix

	Attraction	Repulsion
Domestic Country	1 **Consumer Ethnocentrism** Shimp and Sharma (1987)	2 **Consumer Disidentification**
Foreign	3 **Consumer Affinity** Oberecker, Riefler, and Diamantopoulos (2008)	4 **Animosity** Klein, Ettenson, and Morris (1998)

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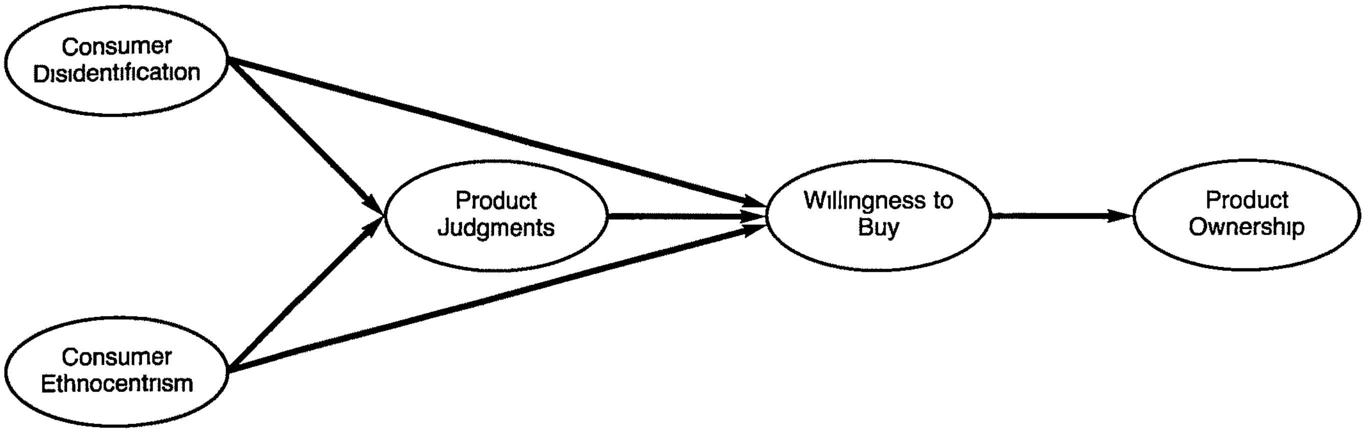
[4] The focus of both consumer ethnocentrism and CDI in the attraction–repulsion matrix is on the consumer. As such, dispositions regarding other issues (e.g., attitude toward war, preferred ethnic diversity, political views) might be more appropriately addressed by applying the more general concepts of ethnocentrism (Sumner 1906) and national disidentification (Verkuyten 2007).

FIGURE 2
The Consumer Ethnocentrism–Disidentification Model



H_1 CDI has a negative effect on product judgments

H_2 CDI has a negative effect on willingness to buy

H_3 Willingness to buy has a positive effect on the ownership of domestic products

Issues related to how people adapt to life in other cultures have been examined in the literature on consumer adaptation (Berry 1997, 1990, 2001, Kim, Laroche, and Tomiuk 2001, Laroche et al 2007) In this literature, two frequently investigated issues are acculturation and ethnic identification Acculturation reflects varying degrees of identification with and attachment to the dominant culture (Laroche et al 2007), and ethnic identification refers to the extent to which traits from the original culture are maintained (Kim, Laroche, and Tomiuk 2001) With their focus on attachment and maintenance, these constructs occupy a conceptual domain that is distinct from CDI Unlike CDI, but similar to consumer ethnocentrism, both constructs focus on aspects of positive (rather than negative) dispositions Although the two consumer adaptation constructs are closely related to consumer ethnocentrism, the literature on consumer adaptation and consumer ethnocentrism has developed rather separately, and few researchers have explicitly examined the relationship between the constructs In a recent literature review, Shankarmahesh (2006) identifies more than 25 antecedents of consumer ethnocentrism, only one study includes measures of ethnic identification and consumer ethnocentrism, while acculturation is not featured among the identified antecedents in his review of the literature

General acculturation is substantially related to more specific acculturation outcomes, such as linguistic, mass media, and social interaction acculturation (Kim, Laroche, and Tomiuk 2001) Acculturated consumers who identify with and are attached to the dominant culture have learned the traits of the culture in which they reside This learning involves aspects such as speaking the language, watching mainstream media, socializing with locals, and considering the culture rich and precious (Kim, Laroche, and Tomiuk 2001) Learning and knowledge positively influence evaluations, preferences, and choices related to the dominant culture (Alba and Hutchinson 1987, Ballantyne, Warren, and Nobbs 2006, Chung and Szymanski 1997)

Theoretically, such a relationship is also implied in the classic hierarchy-of-effects model (Baker et al 1986, Smith, Clurman, and Wood 2006) In particular, greater familiarity often leads to a greater salience in the similarity between the group and the individual (Mael and Asforth 1992). Therefore, it is reasonable to expect that immigrant consumers who have learned and take part in these aspects of their new culture (i e , those who have acculturated) are more susceptible to consumer ethnocentric tendencies than consumers who have not learned these new cultural traits In contrast, increased contact with the new culture leads to a more complex understanding of this culture and, thus, to more moderate views on the dissimilarities between the individual and the group (Bhattacharya, Rao, and Glynn 1995) Therefore, although there is no basic incompatibility between acculturation and CDI, it is reasonable to expect that more acculturated consumers will exhibit less CDI than less acculturated consumers Consumers with a high degree of ethnic identification want to maintain links with their original culture, and these consumers will exhibit less consumer ethnocentricism than consumers with a lower degree of ethnic identification As previously mentioned, an antecedent of CDI is strong identification with ethnic groups, this is the motivation to test the hypothesis that ethnic identification positively influences CDI Nevertheless, ethnic identification in no way precludes knowing and appreciating the new home country (Berry 1997, 2001, Rudmin 2003) Consequently, it is expected that ethnic identification positively influences CDI for consumers who want to maintain links with their original culture Accordingly, the following hypotheses are formulated

H_4 Acculturation has (a) a positive effect on consumer ethnocentrism and (b) a negative effect on CDI

H_5 Ethnic identification has (a) a negative effect on consumer ethnocentrism and (b) a positive effect on CDI

Studies

In Study 1, in line with established scale development procedures (Churchill 1979), the CDI scale is constructed and validated through the use of experts, focus groups, and a split sample of consumer respondents. Study 2 examines whether CDI differs from consumer ethnocentrism and also probes whether CDI predicts consumers' product-related judgments, willingness to buy, and actual ownership. The participants in this study were immigrants in the Netherlands. Finally, Study 3 investigates the antecedents to and explored moderators of CDI. This study also examines whether CDI differs from national disidentification. Because immigrants from countries that exhibit different levels of cultural distance may differ in their CDI tendency, Study 3 is framed in a more homogeneous population consisting of Turkish immigrants.

Study 1

In this research, CDI refers to a consumer's active rejection of and distancing from the consumption culture of the national group. It is conceptualized as a one-dimensional construct, and a measurement instrument consisting of indicators that reflect this construct is developed. Such a conceptualization is in line with extant disidentification literature in sociology (e.g., Verkuyten and Yıldız 2007).

The objective of Study 1 was to develop a measure for CDI. Another purpose was to examine its salience across different genders and age groups. The data used for this study were collected from a review of the literature, focus groups, experts, and a split' consumer sample. In what follows, the study methods and results are presented, and the study findings are discussed.

Participants and Procedure

Questionnaires containing the CDI items, items measuring attitudinal and intentional variables, and several classificatory questions were administered to a sample of second-generation immigrants who participated for a fee of €7. This research is conducted with immigrants, but it is worth noting again that CDI is not unique to this group and may be found among other groups that distance themselves from the "typical domestic consumer." The respondents were recruited through mall intercepts in a major Dutch city and were debriefed after participation. Usable answers were gathered from 636 of the 1674 people invited to participate, resulting in a 38% response rate. The sample was randomly split into two equal groups in line with established scale development procedures (Noar 2003).

Exploratory factor analysis (EFA) was carried out on half the sample to reduce the pool of items, and confirmatory factor analyses (CFAs) were performed on the other half to assess unidimensionality. Respondents in the split sample used for the EFA (Sample 1b in Table 1) were between ages 18 and 65 years ($M_{age} = 40.92$, $SD = 14.28$), and 56% were men. Of this half of the split sample, 37% had completed a bachelor's degree or higher. In the other half, which was used for the CFA (Sample 1c in Table 1), the respondents were between 18 and 68 years of age ($M_{age} = 41.41$, $SD = 14.23$). The gender division was identical across the two samples, and 35.4% of this group had completed an undergraduate or higher degree (for sample characteristics, see Table 1). A comparison of the mean differences with regard to the independent variables between early and late respondents indicated no statistically significant differences at the .05 level.

Measures

A new scale was developed for the CDI construct. Items for the scale were generated following a combination of inductive and deductive approaches (see Hinkin 1995). First, a pool of items representing related domains was gathered from the literature on national disidentification (e.g., Ikegami and Ishida 2007; Jasinskaja-Lahti, Liebkind, and Solheim 2009; Verkuyten 2007; Verkuyten and Yıldız 2007); these were adapted to the conceptual domain of CDI. Second, to achieve a richer set of items, three focus groups—consisting of eight, eight, and seven undergraduate and graduate students, respectively (see Sample 1a in Table 1), who were all second-generation immigrants—were conducted at a large Dutch university. Duplicate items were eliminated, which left 22 items intended to reflect the domain of interest.

To ensure an adequate level of content and face validity, 11 researchers in marketing and sociology at a major international research university evaluated the remaining items

TABLE 1
Sample Characteristics

Samples	Sample 1a	Sample 1b	Sample 1c	Sample 2	Sample 3
Sample size	23	318	318	336	539
Age (%)					
<35 years	61.0	38.0	36.5	37.2	42.2
35–54 years	34.5	39.0	40.2	37.2	38.1
>54 years	4.5	23.0	23.3	25.6	19.7
Gender (%)					
Female	30.5	44.0	44.0	47.9	54.2
Male	69.5	56.0	56.0	52.1	45.8
Education (%)					
Finished a master's degree or higher		11.3	10.1	11.6	6.8
Finished a bachelor's degree		25.7	25.2	24.7	21.2
Enrolled at university		12.0	13.2	14.0	12.0
Finished secondary school		46.0	47.8	46.7	50.6
Finished primary school		5.0	3.8	3.0	9.4

with regard to how well they reflected the full content of the CDI construct (assessment of content validity) and how well they reflected the intended construct and not some other construct (assessment of face validity). In addition, the experts noted ambiguously worded items and redundant items. As a result of the expert judges' evaluations, 13 items were eliminated, for a total of 9 items.

Because of the somewhat sensitive nature of the topic, it was prudent to test the CDI measure for susceptibility to social desirability bias. Social desirability was measured with items from the social desirability bias scale developed by Crowne and Marlowe (1960; see also Fisher 1993; Hays, Hayashi, and Stewart 1989).

The CDI measure and the questionnaires used in the following studies were all originally developed in English, translated into Dutch by independent translators, and then back-translated into English to ensure accuracy (Brislin 1970). For the three studies herein, four questionnaire versions with a unique question order were distributed (see Hinkin, Tracey, and Enz 1997); no order-effect bias was detected.

Results

Data from this and the following studies were analyzed using a combination of SPSS Statistics 17, SPSS AMOS 17, and Microsoft Excel 2007 software packages. As a preliminary step, the univariate skewness and kurtosis of the variables were examined and found to be within acceptable limits. Then, an EFA was conducted. The item-to-total scores and factor loadings were evaluated in two steps; the CDI items were evaluated sequentially using .4 and .5, respectively, as the critical thresholds (Hair et al. 1998). Each item was evaluated to verify whether deleting it would significantly change the domain of the construct. The evaluation of the item-to-total correlations resulted in the removal of three items, which left six.

The Kaiser–Meyer–Olkin (KMO; Kaiser 1974) measure and Bartlett's (BTS; 1951) test of sphericity indicated that the data were appropriate for running a factor analysis (KMO = .864, BTS = 916.487, d.f. = 15, $p < .001$). To determine how many factors to retain, a combination of factor-retention decision rules was used. Because researchers often rely too heavily on only the Kaiser–Guttman criterion (Lance et al. 2006), multiple criteria were chosen. A scree test (Zwick and Velicer 1986) was also performed, as well as a parallel analysis (Horn 1965) (for more details, see the Web Appendix [http://www.marketingpower.com/jmmarch11]). The items loaded on a single factor, in support of the contention that CDI is a one-dimensional construct. The final set of CDI items reflects the extent to which surveyed consumers distance themselves from the typical Dutch consumer.

Next, the model was subjected to CFA to verify its unidimensionality. The data were obtained from the second half of the split sample, providing 318 questionnaires for the CFA. This procedure, which was based on maximum likelihood, was carried out on the combined measurement model. To evaluate the factor model, a combination of absolute fit indexes (chi-square/degrees of freedom [χ^2/d.f.] and root mean square error of approximation [RMSEA]) and incremental fit indexes (incremental fit index [IFI] and comparative fit index [CFI]) was used.[5] The results indicate that the items loaded as predicted, in support of unidimensionality (Gerbing and Anderson 1988). Model fit indexes were as follows: $\chi^2 = 428.623$, d.f. = 143, χ^2/d.f. = 2.992, RMSEA = .06, IFI = .96, and CFI = .96. Model fit represented a significant improvement over the null model ($\chi^2 = 7387.070$, d.f. = 171). In addition, the correlation between the CDI scale and social desirability measures was –.02 (not significant [n.s.]), suggesting that social desirability bias was not a significant problem for the CDI scale.

A follow-up test examined whether gender and age constitute boundary conditions with regard to the levels of CDI. Two groups were constructed for each variable. For the age variable, a median split was used to construct a young and an old group; the gender variable was split into female and male. The results demonstrate CDI invariance with regard to gender (mean difference = –.03, t = –.24, n.s.) and age (mean difference = .01, t = .05, n.s.).

Discussion

This initial study developed a reliable and stable measure of CDI that reflects the degree to which a consumer disidentifies with the domestic consumer group. Validity and reliability are replicated in the following studies. The scale is short and easy to administer, and it is internally consistent and reliable.

The measure for statistical invariance in various demographic segments was also investigated, and the results show that CDI is salient across segments. Specifically, women and men exhibit similar levels of CDI. Similarly, there is no difference in the levels of CDI that younger and older consumers experience. Study 2 examines whether CDI differs from consumer ethnocentrism and also probes whether CDI predicts consumers' product-related judgments, willingness to buy, and actual ownership.

Study 2

The objective of this study was to examine the consumer ethnocentrism–disidentification model. Specifically, H_1, H_2, and H_3, which pertain to assertions about the discriminant validity of CDI and the structural relationships between CDI and outcomes, were tested.

Participants and Procedure

Questionnaires containing the CDI items, including items measuring attitudinal and intentional variables and several classificatory questions, were distributed to a second sample of second-generation immigrants living in the Netherlands. The respondents were asked to answer a questionnaire about Dutch products in general. A professional market research firm that selects respondents from a nationwide panel of households collected the data for these samples.

Eight hundred eighty-four questionnaires were mailed to potential respondents, and 352 responses were returned. Of these, 16 responses were incomplete, so 336 cases were used in the analyses, for a response rate of 38% The respondents were between 18 and 65 years of age (M_{age} = 41 94, SD = 14 91), and 52 1% were men More than one-third of the respondents had completed an undergraduate or higher degree (for sample characteristics, see Table 1) A comparison of the mean differences between early and late respondents with regard to the independent variables indicated no statistically significant differences at the 05 level

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[5] The chi-square statistic has well-documented problems even with moderate sample sizes (Wheaton et al. 1977), so this article relies on the chi-square statistic when adjusted for degrees of freedom.

Measures

The product judgment scale used in this study (see the Appendix) was adopted from Klein, Ettenson, and Morris (1998) and Ouellet (2007) The scale measures product judgment along a three-item (good/bad, favorable/unfavorable, and satisfactory/unsatisfactory) seven-point semantic differential scale (α = 975) Willingness to buy was assessed with a four-item, seven-point semantic differential scale (α = 948) derived from previous studies (i e , Klein, Ettenson, and Morris 1998, Ouellet 2007) The scale includes items such as "I do not like the idea of owning Dutch products " Consumer ethnocentrism is measured by items from the CETSCALE (Klein, Ettenson, and Morris 1998, Nijssen and Douglas 2008, Steenkamp, Ter Hofstede, and Wedel 1999) One of the items ("Dutch products first, last, and foremost") intended to measure consumer ethnocentrism exhibited very low item loading and item-to-total correlation and was deleted from the final scale (α = 862) In line with Steenkamp, Ter Hofstede, and Wedel (1999), previously collected Dutch consumer data were used in a pretest to correlate this five-item scale with the ten-item CETSCALE (Shimp and Sharma 1987), the correlation exceeded 95

Product ownership was assessed by asking the respondents to indicate the country of origin of the products they own in six categories of durable goods (television, DVD player, headphones, radio, camera, and refrigerator) (see Klein, Ettenson, and Morris 1998) The number of products each respondent owned was used as a single indicator of product ownership, with the error variance constrained to the same level as the smallest error variance in the model (Anderson and Gerbing 1988) The relative amount of money spent on and the number of purchases of Dutch products were measured by asking the respondents to indicate the proportional amount of money they had spent on Dutch products from a figure of €10 and to indicate the number of purchases of Dutch products out of every ten purchases (Carpenter 2008)

Results

To assess the reliability of the scales, the coefficient alpha (Cronbach 1951), the composite reliability, and the average variance extracted (AVE) for each construct (Fornell and Larcker 1981, Gerbing and Anderson 1988) were calculated (see Table 2) The "accuracy or precision of a measuring instrument" (Hinkin 1998, p 112) is an important indicator of the instrument's quality and a necessary condition for construct validity (Hair et al 1998) The scales exhibited good internal consistency, with alpha values above the threshold value of 8 (see DeVellis 1991, Nunnally 1978) The composite reliabilities were also above 8, indicating acceptable levels of reliability for the measurement instrument (Fornell and Larcker 1981)

Several steps that Podsakoff et al (2003) suggest were taken to mitigate the threat of common method bias Specifically, the study employed different response formats, assured anonymity, and assured respondents that there were no wrong answers The Harman's one-factor test was used to evaluate whether all the manifest variables could be

TABLE 2
Parameters for the CDI Scale

	Study 2 Parameters			Study 3 Parameters		
Constructs/Items	**Item Mean**	**Item Loadings**	**Corrected Item-to-Total Correlation**	**Item Mean**	**Item Loadings**	**Corrected Item-to-Total Correlation**
1 In general, I dislike the consumption culture of the Dutch consumers	2 26	681	514	3 64	771	665
2 It is good if they say something bad about Dutch consumers	2 96	767	611	4 42	719	608
3 I object to being seen as just another Dutch consumer	2 99	768	617	3 66	901	836
4 I always tend to not shop in the same places as the Dutch	2 94	626	556	3 69	861	777
5 Generally, I do not want to consume like the Dutch	3 09	692	630	4 09	775	673
6 I sometimes feel uncomfortable if people think I buy the same as the Dutch do	2 97	614	554	3 81	789	687
Coefficient α			805			890
Composite reliability			849			889
AVE			50 9%			57 7%
Explained variation of extracted factor			60 8%			63 3%
Parallel analysis threshold/ highest none-extracted eigenvalue			1 089/ 857			1 089/ 736

Notes The items are scored on a seven-point Likert scale (1 = "strongly disagree," and 7 = "strongly agree") accounted for by one latent factor This test indicates whether common method variance poses a serious threat to the interpretation of the findings (Jayachandran and Varadarajan 2006, Kandemir, Yaprak, and Cavusgil 2006) The chi-square values of the single-factor model and the hypothesized model indicated that the fit in the single-factor model was significantly worse ($\Delta\chi^2 = 6742\ 088$, d f = 10, $p < 001$) than the measurement model This result indicates that common method variance is not a serious problem for the measurement model In addition, a marker variable was used to assess comprehensively whether the measurement model was robust to common method variance Respondents provided their confidence in the German economy (because this question was expected to be unrelated to the CDI scale) In the study, the correlation between the respondents' confidence in the German economy and their Dutch CDI was 03 and nonsignificant The results of the Harman test, along with the evidence from the correlations between the CDI scale and the marker variable, indicated that common method bias did not pose a serious threat to the interpretation of this study's results

The study tested whether the information the CDI measure captures is distinct from that which the consumer ethnocentrism measure captures As discussed previously, since Shimp and Sharma's (1987) influential article, consumers' ethnocentrism has been of enduring interest to marketing researchers Because consumer behavior in relation to domestic products is the focus of both consumer ethnocentrism and CDI, it is necessary to establish whether there is empirical support for them as distinct constructs Researchers measuring consumer ethnocentrism (e g , Klein, Ettenson, and Morris 1998) almost exclusively adopt Shimp and Sharma's (1987) CETSCALE, therefore, the current study also used this scale to measure consumer ethnocentrism

The discriminant validity of the CDI scale against the CETSCALE was assessed by conducting a simple factor analysis on the pool of items from both consumer ethnocentrism and CDI The two constructs were extracted in the factor analysis, and the items loaded as hypothesized (see the Web Appendix [http //www marketingpower com/ jmmarch11]) Discriminant validity is more comprehensively evidenced by calculating the shared variance between all possible pairs of constructs and demonstrating that they are lower than the AVE for any of the constructs individually In this case, the squared correlation between the latent variables was 04, and the lowest AVE was 51 (CDI) All possible pairs passed Fornell and Larcker's (1981) test, showing discriminant validity among the construct measures Taken together, this evidence reinforces the contention that the CDI scale captures information distinct from that which the CETSCALE captures

The network in which CDI was further assessed is the established ethnocentrism model, which incorporates the sequential effects of consumer ethnocentrism on product judgment and, in turn, on consumers' willingness to buy domestic products Finally, the study also investigated the effect on actual product ownership

The consumer ethnocentrism–disidentification model in Figure 2 consists of CDI, consumer ethnocentrism, product judgment, willingness to buy, and actual product ownership The data were fit to a structural equation model in AMOS 17 0 to examine the overall fit of the model (Rust, Lee, and Valente 1995) On examination of the data, it was discovered that CDI levels were not very high in this consumer cohort (M = 2 84) On investigation of the significant paths in the model, 95% (or 19 of 20) of the paths were significant Overall, the model accounted for 40% of the variance in willingness to buy domestic products Willingness to buy domestic products accounts for 24% of the variance in ownership of Dutch products The path from CDI to product judgment is significant and negative (– 41, $p < 001$), in support of H_1 H_2 asserts that CDI affects consumers' willingness to buy domestic products, the results show that the path from CDI to willingness to buy is significant and negative (– 29, $p < 001$), in support of H_2 The path from willingness to buy to actual ownership is significant and positive (35, $p < 001$), in support of H_3

Consumer ethnocentrism was also investigated as an antecedent to product judgments and willingness to buy (see Figure 3) The path from consumer ethnocentrism to willingness to buy is significant and positive (37, $p < 001$), however, the path from consumer ethnocentrism to product judgment is not statistically significant (– 03, n s)

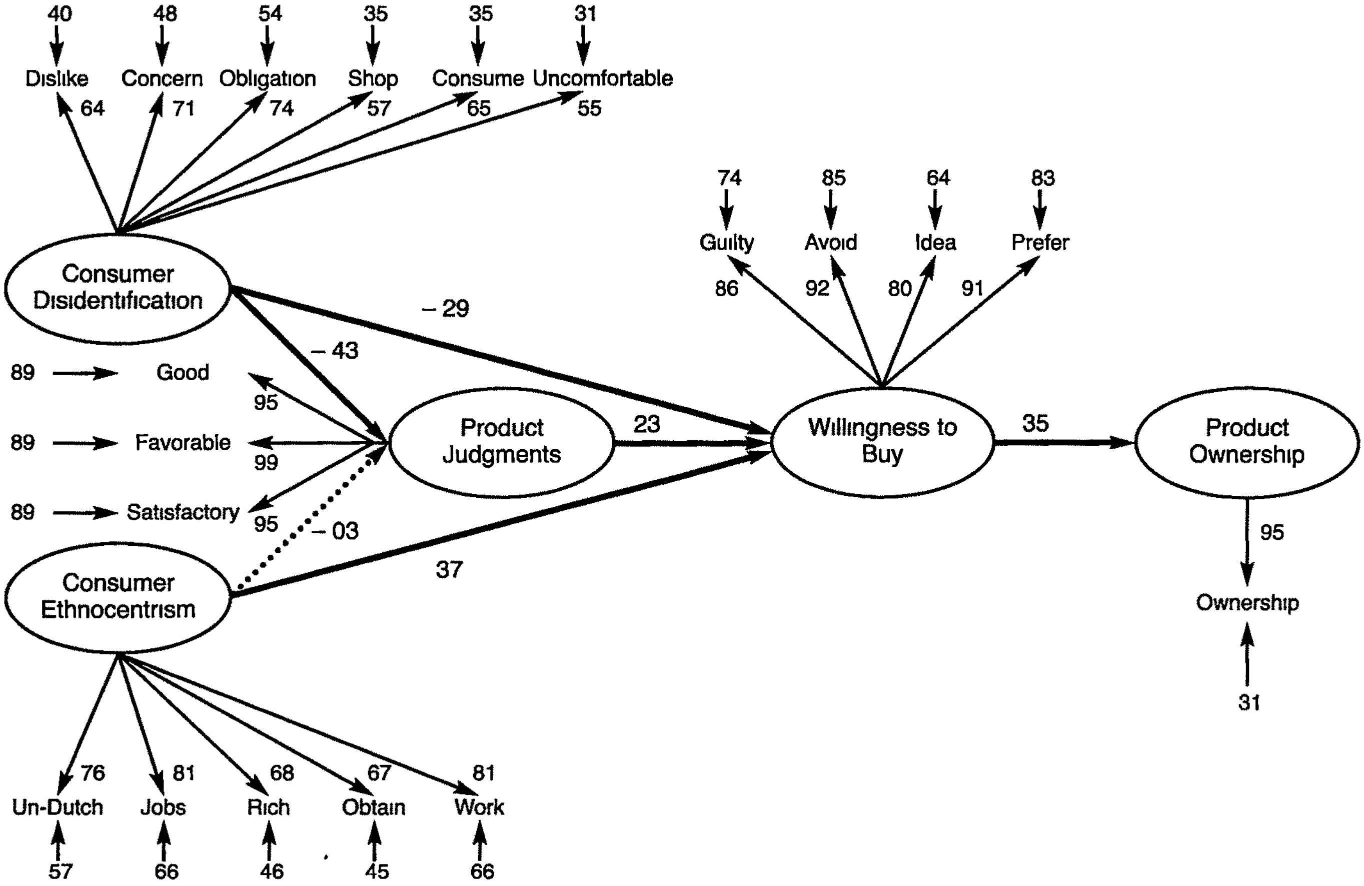
Discussion

The results of this study reveal that CDI and consumer ethnocentrism measure different phenomena This finding has profound implications for future studies that measure domestic consumer biases Because consumer ethnocentrism takes into account different consumer dispositions to domestic consumption, it is important that researchers aiming to understand the influence of domestic consumer biases include CDI

Second-generation immigrant consumers' disidentification with the Netherlands is negatively related to their willingness to buy Dutch products The effect of CDI on willingness to buy domestic products is both direct and through their product judgments Although there is no product denigration in the case of animosity, the finding that disidentifying consumers do not buy domestic products and denigrate the product quality is consistent with the findings of previous studies For example, Shoham et al (2006) find product denigration among Jewish Israelis judging Arab Israeli products and suggest that denigration more likely occurs when the products are related to the culture of the "disliked other" Consumer disidentification reflects a rejection of the domestic consumer group, and this affects evaluations of the products and the willingness to buy them In contrast, the animosity construct is related to anger over specific events, therefore, although consumers do not want to purchase products from the perpetrating country, they do recognize the quality of the products

In this study, consumer ethnocentrism has a direct effect on willingness to buy but no effect on product judgment Previous studies (e g , Suh and Kwon 2002) have shown that consumer ethnocentrism affects willingness to buy but not product judgments, however, this finding is somewhat surprising because most noteworthy research (e g , Klein, Ettenson, and Krishnan 2006, Sharma, Shimp, and Shin

FIGURE 3
The Consumer Ethnocentrism–Disidentification Model: Structural Equation Model Results (Study 2)



1995, Watson and Wright 2000) in this area has found that consumer ethnocentrism influences willingness to buy directly and indirectly through product judgments

The explanation may lie in the unusual characteristics of the respondents when testing consumer ethnocentrism As such, previous consumer ethnocentrism studies have collected data from populations that are expected to exhibit consistently greater ethnocentric tendencies than the population that was sampled for this study

Another possible explanation is that Dutch products in general may be judged to be of higher quality than products from the home countries of the immigrant respondents The reason is that consumers tend to judge products from more developed countries more positively than products from less developed countries (Verlegh and Steenkamp 1999) In Klein, Ettenson, and Morris's (1998) study on Chinese consumers' animosity toward Japan and Japanese products, the Chinese consumers acknowledged that Japanese products in general were of a high quality, and therefore their animosity did not negatively influence their product judgments A similar mechanism may be at play in this study, in which even the second-generation immigrant consumers with low ethnocentrism acknowledged the quality of Dutch products Furthermore, immigrant consumers' ownership of Dutch products was predicted by their willingness to buy Dutch products, which in turn was predicted by CDI with the Netherlands

Study 3 was conducted to investigate antecedents to and explore moderators of CDI The participants in this study were immigrants in the Netherlands Because immigrants from countries that exhibit different levels of cultural distance may differ in their CDI tendency, Study 3 was framed in a more homogeneous population of Turkish immigrants

Study 3

Study 3 attempted to replicate and extend the findings of Study 2 While the CDI construct is pan-cultural and applies to all disidentifying groups, the antecedents of CDI are context specific Therefore, the consumer ethnocentrism–disidentification model was extended by adding antecedents from adaptation theory The study also explored whether gender or age moderates the ability of CDI to predict consumer judgments and willingness to buy A third consumer sample was recruited to test the hypothesized effects

Participants and Procedure

Despite the relatively high impact of CDI on consumer behavior in Study 2, the relatively low levels of CDI may cast some doubts as to the importance of the construct among second-generation immigrants in general Therefore, the study further validated the model and tested H_5–H_7 using a group of second-generation Turkish immigrants (Sample 3 in Table 1), which was expected to show higher levels of CDI than a group of general immigrants This opportunity was also used to collect data on the respondents' relative amount of money spent on Dutch products and the relative number of Dutch products purchased The intention was to further test the consumer ethnocentrism–disidentification model's impact on actual consumer behavior

A professional market research firm that selects respondents from a nationwide panel of households collected the data for this study The sample (Sample 3 in Table 1) consisted of second-generation immigrants of Turkish descent One thousand five hundred fifty-one questionnaires were mailed to potential respondents, and 571 responses were returned Of the responses, 32 questionnaires were incomplete, thus, 539 cases were used in the analyses, for a response rate of 36 8% The respondents were between 18 and 72 years of age (M_{age} = 40 20, SD = 13 15), and 54 2% were women In addition, 28% of respondents had completed an undergraduate or higher degree (for sample characteristics, see Table 1)

Measures

The measure for acculturation was adopted from Laroche et al (2007) and was substantially correlated with measures of linguistic, mass media, and social interaction acculturation (Kim, Laroche, and Tomiuk 2001) The three-item scale was reliable (α = 918) The scale to measure ethnic identification (Laroche et al 2007) captures the degree to which the respondents maintain an identification with their Turkish heritage and consists of six items (α = 982) National disidentification (α = 870) was measured with five items from Verkuyten and Yıldız (2007) (for the scale items, see the Appendix)

Results

On examination of this cohort of respondents, it was clear that CDI was more salient in this sample than in Study 2 ($\bar{X}$ = 3 89) As a preliminary exploration of the data, this study examined whether CDI levels in this cohort differ across women and men and across younger and older consumers The results demonstrate CDI invariance with regard to both gender (mean difference = 04, t = 33, n s) and age (mean difference = 17, t = 1 40, n s)

The CDI scale and the CETSCALE were retested for discriminant validity Fornell and Larcker's (1981) test and the additional factor analysis supported the discriminant validity of the construct (see the Web Appendix [http // www marketingpower com/jmmarch11]) Table 3 provides the construct correlations The fit indexes showed that the model had a satisfactory fit given the data (χ^2/d f = 3 067, RMSEA = 06, IFI = 96, and CFI = 96) An investigation showed that 95% (or 19 of 20) of the paths were significant Overall, the model accounts for 38% of the variance in respondents' willingness to buy domestic products By itself, CDI explains 31% and consumer ethnocentrism explains 29% of variation in willingness to buy (note that these percentages cannot be added because the two drivers of domestic consumer behavior are not mutually exclusive) In turn, willingness to buy domestic products accounts for 20% of the variance in ownership of Dutch products

The path from CDI to product judgment was significant and negative (– 29, $p <$ 001), lending further support to H_1 H_2 asserts that CDI affects consumers' willingness to buy domestic products The results (see Figure 4) show that the path from CDI to willingness to buy is significant and negative (– 42, $p <$ 001), thus, H_2 is also supported among second-generation Turkish immigrants As further confirmation of H_3, the results show that willingness to buy domestic products is related to ownership of Dutch products (44, $p <$ 001) The path from consumer ethnocentrism to willingness to buy was significant and positive (35, $p <$ 001), and the path from consumer ethnocentrism to product judgment remained nonsignificant (00, n s)

This study also investigated the impact of willingness to buy Dutch products for its effect on consumers' relative purchases of Dutch products Willingness to buy domestic products accounts for 24% of the variance in relative product purchases and 22% of the variance in money spent on Dutch products These findings provide further support for H_3 and are evidence of an impact of the consumer ethnocentrism–disidentification model on actual consumer behavior

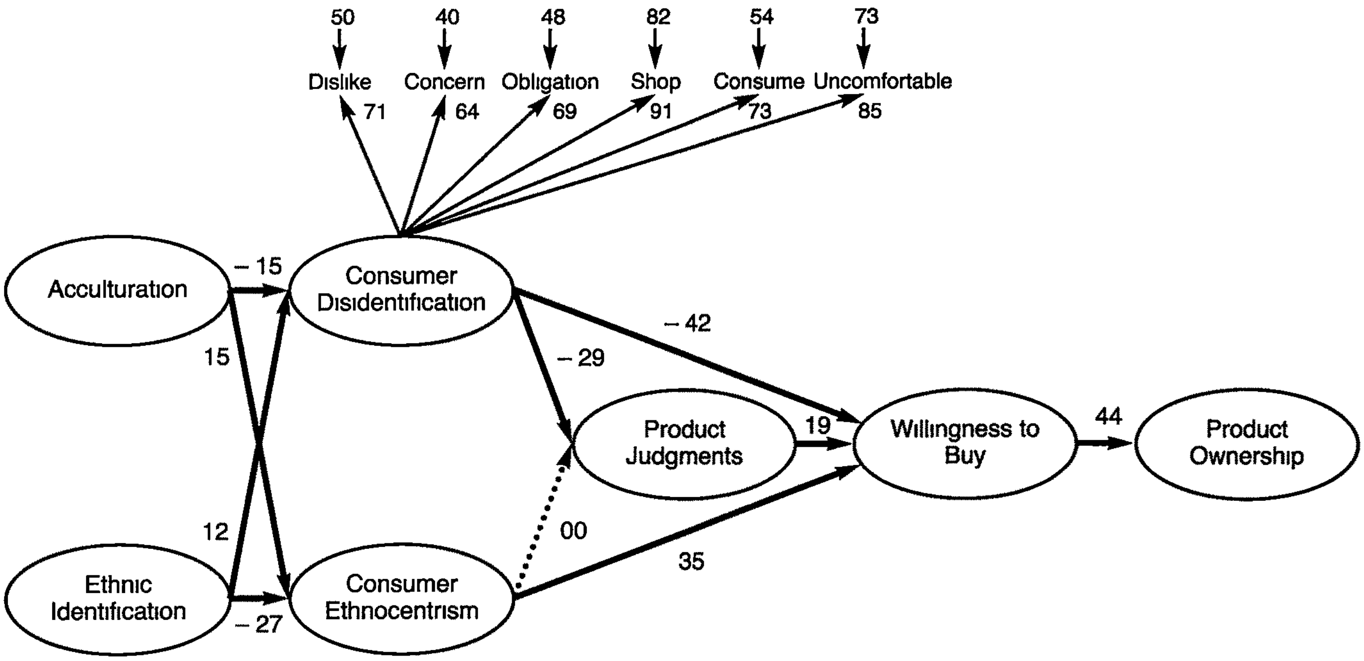
The study further tested whether CDI is distinct from general national disidentification For this consumer sample, the squared correlation between the latent variables was 21, and the lowest AVE was 56 (consumer ethnocentrism) All possible pairs again passed Fornell and Larcker's (1981) test, showing discriminant validity among the construct measures Fornell and Larcker's test is considered a conservative test, and the evidence from the test reinforces the

TABLE 3
Construct Correlations

Variable	1	2	3	4	5	6	7
1 CDI	1 00						
2 Consumer ethnocentrism	– 27	1 00					
3 National disidentification	46	– 12	1 00				
4 Acculturation	– 20	05	– 62	1 00			
5 Ethnic identification	14	– 25	39	– 28	1 00		
6 Product judgment	– 27	05	– 11	01	– 06	1 00	
7 Willingness to buy	– 45	39	– 22	21	– 27	31	1 00
M	3 89	2 52	3 96	2 85	3 49	3 05	2 96
SD	1 40	1 78	1 22	1 19	1 22	1 39	1 56

FIGURE 4

The Consumer Ethnocentrism–Disidentification Model: Structural Equation Model Results (Study 3)



contention that the CDI scale captures information that is different from that of the general national disidentification scale.

The findings related to the relationships between the consumer adaptation constructs and CDI were all in the hypothesized directions. The path from acculturation to consumer ethnocentrism was significant and positive (.15, $p < .001$), and the path to CDI was significant and negative (–.15, $p < .001$). Ethnic identification was negatively related to consumer ethnocentrism (–.27, $p < .001$) and positively related to CDI (.12, $p < .01$). These findings fully support H_4 and H_5.

The study also explored the potential of two demographic variables, consumer gender and age, to influence the effect of CDI on product-related judgments and intentions. This test was performed by using multigroup structural equation modeling to compare two groups for each of the moderating variables (Joreskog and Sorbom 1996). The two groups comprised women and men, and for the age variable, a median split was used to divide the sample into a younger group and an older group. A comparison was made, for each moderator and each structural path of interest, between an unconstrained model and a model in which the path coefficient of interest was specified as invariant across subsamples. This approach ensures that the chi-square difference test has only one degree of freedom; therefore, chi-square differences greater than the critical value of 3.84 are statistically significant.

For gender, the chi-square difference values indicated that there was no significant difference between men and women in the sample for either the effect of CDI on product judgments ($\chi^2 = 1.41$, n.s.) or the effect of CDI on willingness to buy ($\chi^2 = 2.92$, n.s.). For the consumers' age, the coefficient that describes the relationship between CDI and judgments did not differ ($\chi^2 = 2.43$, n.s.) across the two groups (younger and older), nor did the coefficient that describes the relationship between CDI and willingness to buy ($\chi^2 = 3.61$, n.s.). The results collectively indicate that CDI is a valid and important mechanism that predicts consumer behavior in domestic markets.

Discussion

The results of Study 3 further validate the CDI measure and the substantive results obtained in Study 2. The results also demonstrate that CDI is distinct from national disidentification. The presence of consistent levels of CDI across gender and age were confirmed in this more homogeneous cohort.

Furthermore, the results confirm the finding that second-generation Turkish immigrant consumers' disidentification with the Netherlands is negatively related to their willingness to buy Dutch products. The effect of CDI on willingness to buy domestic products is both direct and through their product judgment.

The results also confirm that in the consumer ethnocentrism–disidentification model, consumer ethnocentrism directly affects willingness to buy but does not affect product judgment. Turkish immigrant consumers' ownership of Dutch products, as well as the proportion of purchases of Dutch products and relative amount of money spent, was predicted by their willingness to buy Dutch products, which in turn was predicted by their CDI with the Netherlands.

The results further reveal that consumer adaptation predicts consumers' dispositional responses. More acculturated consumers exhibit less disidentification and more ethnocentric tendencies. People who want to maintain strong links with their cultural background tend to be less ethnocentric and show stronger propensity for CDI These findings add to the literature on consumer ethnocentrism and consumer adaptation (Cleveland, Laroche, and Papadopoulos 2009, Donthu and Cherian 1994, Guzman and Paswan 2009, Klein, Ettenson, and Krishnan 2006, Shimp and Sharma 1987)

The study also explored the potential influence of gender and age on the ability of CDI to predict product judgments and willingness to buy and found no empirical evidence for the interaction of these demographic variables The explanation for this finding may be in the effects that counter each other For example, while most studies find that women draw more on social constructs in their decision making (Bakan 1966), a recent study (Melnyk, Van Osselaer, and Bijmolt 2009) finds that men sometimes draw on social constructs as much as or even more than women Melnyk, Van Osselaer, and Bijmolt (2009) find that women were more loyal to individual service providers than men but that men were more loyal to firms than women Their research also indicates that men draw on social constructs more than women when the construct is faceless and external (e g , a firm they purchase from) while women draw more on social constructs when the construct is personal and external (e g , an individual service provider) Because Melnyk, Van Osselaer, and Bijmolt investigate only the difference between genders in terms of individuals and the groups they are not part of, it is unclear whether the propensity to draw on social relations is different when consumers are themselves part of the group (e g , their domestic group)

The finding that age does not interact with the relationship between CDI and product judgments and CDI and willingness to buy might be explained by two countering effects On the one hand, older consumers may experience less risk and therefore may be prone to using the country cue as a proxy On the other hand, they may have more time and financial freedom to consider a wider range of products and product cues If the latter is the case, older consumers may be less likely to rely on any single cue, including whether the product is domestic or foreign To conclude, the results regarding gender and age as moderators in the model demonstrate that CDI is relevant and important across these segments

General Discussion

Thoughtful marketing researchers and managers who investigate consumers' dispositional responses toward purchasing domestic products currently use the construct of consumer ethnocentrism to do so The research reported herein demonstrates that such an approach provides an incomplete picture at best The studies in this research identify and test the effect of a previously unrecognized factor in the study of consumer behavior—consumers' disidentification with the domestic consumer group—which turns out to be a significant factor for consumer purchase behavior

This research introduced the CDI construct, developed a reliable and valid scale that measures consumers' disidentification with their domestic country, and examined several antecedents and outcomes of CDI A general theoretical implication of this research is that any future study investigating consumers' dispositional responses to domestic product purchase should acknowledge not only consumer ethnocentrism but also CDI This assertion is supported by the consumer ethnocentrism–disidentification model, which reveals that CDI has an independent and important influence on consumers' product-related judgments, willingness to buy, and actual purchases

Finally, drawing on research from the social sciences, the attraction–repulsion matrix offers an integrated perspective on dispositional consumer responses that are not entirely related to quality expectations The attraction–repulsion matrix provides an overview that can help guide research toward areas that are yet to be investigated The matrix also serves to delimit the conceptual domain of the four constructs Furthermore, the matrix serves as a guide for researchers and marketers about which construct is relevant in each context Overall, these findings provide marketing managers and researchers with considerable evidence that CDI is an important factor that influences consumers' purchase behavior, in other words, CDI matters

Managerial Implications

This research indicates several potential implications for marketing managers First, firms could include the CDI scale in their periodic tracking studies to ascertain the level of CDI in their domestic market The CDI scale could also be administered to gain particular insights into regional differences in CDI levels Firms could use such information to indicate whether the national origin of their products should be promoted in the respective regions

Domestic firms that want to understand CDI and need to defend their markets against increased international competition can apply the CDI scale High levels of consumer ethnocentrism in the domestic market help create barriers to entry that protect domestic firms from the competition of foreign firms However, if a high level of CDI characterizes a large part of the domestic market, a strategy to exploit consumer ethnocentrism levels may backfire Indeed, the potential of domestic firms to enjoy a competitive advantage relative to foreign firms depends on the levels of both consumer ethnocentrism and CDI

Conversely, exporting firms can apply the CDI scale to exploit disidentifying consumer segments in the target country, given that the competition from local manufacturers will be lower in such segments Foreign firms are at an advantage over domestic firms in markets with important consumer segments characterized by high levels of CDI Therefore, firms should purposefully monitor CDI levels in foreign markets to identify and target consumer segments with high levels of CDI

The findings further imply that the CDI construct could be used as a segmentation variable This is even more essential as the evidence suggests that CDI is important and salient across demographic groups because gender and age cannot be used to indicate levels of CDI Measuring CDI levels provides marketing managers with a measurable segmentation basis

In addition, retail chains can use the CDI scale to inform their decisions about the location of new outlets

The strategy for rolling out new outlets is particularly important for domestic firms and brands that are tied to their domestic status in consumers' minds For these firms and brands, locations in which consumers score lower on CDI are more attractive than locations characterized by higher CDI There is no reason to expect that a low ethnocentric consumer will avoid products from his or her domestic country, but a disidentifying consumer will Therefore, managers must understand that if levels of CDI are high, traditional marketing tools, such as sales promotion, brand advertising, and product innovation, may have little impact on overcoming challenges associated with high CDI levels Therefore, it is critical that retailing firms measure CDI levels

Another possibility for the use of information about CDI could be to portray products as disidentifying with the nation-state Such "rebel marketing" may result from the identification of lucrative niche markets One example is a recent ad campaign aired in Great Britain that featured the former Sex Pistols member and antiestablishment figure Johnny Rotten In the advertisement for Country Life butter, Johnny Rotten says, "It is not about Great Britain, it is about great butter", in the quarter following the airing, sales rose 85% (Teather 2009) Additional research is needed to investigate the exact causes and their relative importance behind the soaring sales of the Country Life brand Such a rebel-marketing approach may be particularly appropriate for product categories in which consumers differ Thus, this approach may be especially effective for certain music and movie genres, ethnic products, and products that, for example, symbolize environmental, political, or ethnic values (e g , oil and coal exploration, logging, nuclear power, guns)

Furthermore, for firms whose domestic market is characterized by high levels of CDI, the strategic response may be to downplay national ties in promotion or use ingredient-origin branding (include product parts from or designed in another country) A watch with "Swiss movement inside" or cars with "Italian design" and "German engineering" are the origin image equivalents of "Intel Inside" Although marketing managers currently use this technique to enhance consumers' product-origin image, it may also be useful for marketers faced with disidentifying consumers When the aim of ingredient-origin branding is to influence consumers' quality perceptions, the origins should be countries that usually attract positive product-origin images, for cars, this may be Germany, and for watches, this may be Switzerland Nevertheless, when using ingredient-origin branding to connect with disidentifying consumers, the marketing manager should use a country other that the domestic country to portray the origin of the ingredient, and the origin should preferably portray a similarity with disidentifying consumers

One managerial strategy to overcome high CDI is to associate the branded product with a foreign country through the brand name Such a strategic marketing reaction to high levels of CDI would be a form of foreign branding (Leclerc, Schmitt, and Dubé 1994) Ice-cream maker Haagen-Dazs and the Portuguese fast-food restaurant Nando's are examples of firms using foreign branding to persuade consumers to associate the firm and its products with a foreign product Haagen-Dazs used a map of Denmark on early labels, but the firm has no affiliations to Scandinavia Rather, the firm was started in the Bronx, N Y, in 1961 Nando's is not Portuguese but South African The firm was established in southern Johannesburg in 1987 in an area with many former Portuguese colonists from Mozambique, thus the idea to give the restaurant a Portuguese theme Firms that cater to domestic segments with high levels of CDI should consider such a foreign branding strategy to disassociate themselves from the negative effects of repulsion by disidentifying consumers

Another positioning opportunity is to appeal to the nascent but growing global consumer culture (Steenkamp, Ter Hofstede, and Wedel 1999), positioning the brand as a global brand rather than a brand rooted in any individual country While ingredient-origin branding and foreign branding aim to associate the product with a foreign country through an ingredient origin or the brand name, respectively, a global consumer culture approach aims to disassociate the product with any particular country and instead market the brand as a global brand Thus, the negative effects of CDI and animosity can be negated However, this approach also limits the firm's opportunity to draw on consumer ethnocentrism and consumer affinity

An alternative strategy would be to engage in communication with the disidentifying consumers and try to address some of the issues that cause CDI Specifically, the finding that perceived dissimilarity caused in part by low acculturation pertains to disidentification has implications for public policy In light of this finding, this article suggests that fact-based information dissemination about the national group and its heterogeneous nature can help quell CDI This, however, is likely to be a major, difficult, and long-term task

A further managerial implication of the findings in this research involves another public policy issue When government agencies plan "buy national" campaigns, they must take into account the consumer ethnocentrism–disidentification model and gauge levels of consumer ethnocentrism and CDI For segments with high levels of CDI, the causes of CDI and their relative strength should be determined using a combination of qualitative and quantitative methods Only with this information at hand will the campaign planners be able to plan the campaign and assess its value

As the global trend of migration and the debate on assimilation versus multiculturalism continue, consumers' ethnic identification influences their propensity toward CDI Therefore, firms could broaden their brand image such that it overlaps with important traits of the culture being maintained by this segment, thus reducing the perceived dissimilarities between this consumer group and the firm's target segments

Finally, the results show that CDI is an important construct across different demographic groups Consumer disidentification levels are consistent, and the predictive ability of CDI remains strong across segments Therefore, CDI must be taken into account regardless of the gender and age segments the firm targets In short, these findings hold considerable promise for domestic and international marketers, and the CDI scale provides marketers with a new and useful strategic instrument that leads to a better understanding of how current and prospective customers might react to their products.

Limitations and Further Research

The limitations of this study could propel research on three major, groundbreaking themes. First, the attraction–repulsion matrix indicates that further research is needed to empirically investigate the effect of consumer affinity on product purchase behavior. Current studies of consumers' biases toward foreign countries focus on the animosity of consumers toward a foreign country. Further research could ascertain whether consumer affinity is an important driver of purchase behavior regarding foreign-made products. Such research would have significant policy implications, in addition to implications for managers of firms.

Second, the foreign category (Quadrants 3 and 4 of Figure 1) in the attraction–repulsion matrix could be reclassified and split into specific and general subquadrants; some consumers may be attracted or repulsed by specific foreign countries, while others may be attracted or repulsed by everything foreign in general. The terms that capture these emotions are "xenophilia" (Perlmutter 1954) and "xenophobia" (Hjerm 1998), respectively. Marketing researchers could further investigate the potential of xenophobia and xenophilia in a consumer setting, and they could build on important findings in the area of global branding (Batra et al. 2000). The findings of those investigations would have valuable implications regarding whether and when these constructs predict consumers' purchase behavior. The cross-national nature of these constructs should also make them highly attractive segmentation bases for firms.

Third, this introduction to and initial test of the CDI construct focuses on testing the pancultural construct in the specific case of the Netherlands. Further studies should examine CDI in other countries. Also needed is an investigation of CDI among subcultures other than those defined by immigration, such as native peoples of, for example, the United States, Peru, and Australia or youth subcultures that challenge the national society. This topic is of special importance as firms rush to compete with domestic firms in distant markets.

Additional antecedents of CDI are also waiting to be discovered, and because previous research (e.g., Kim, Laroche, and Tomiuk 2001) suggests that acculturation and ethnic identification are multidimensional constructs, the relative impact of these dimensions on consumer ethnocentrism and CDI would be worthwhile research endeavors. Furthermore, researchers should investigate whether and how CDI affects product judgments and willingness to buy foreign products. It is plausible that strong CDI positively predicts consumers' dispositional responses toward foreign products.[6] In addition to these major research themes, the introduction and development of the CDI scale offers a research instrument that should encourage and facilitate further research into the otherwise neglected phenomenon of CDI.

Appendix
Study Constructs

Product Judgments *(modified from Ouellet 2007) ($\bar{X} = 3.05$, $S = 1.39$)*

- Dutch products seem good.
- I am favorable toward products made in the Netherlands.
- Dutch-made products seem to be unsatisfactory.

Willingness to Buy *(modified from Darling and Wood 1990; Klein, Ettenson, and Morris 1998; Ouellet 2007) ($\bar{X} = 2.96$, $S = 1.56$)*

- I would feel guilty if I bought a product made in the Netherlands.
- Whenever possible, I avoid buying Dutch products.
- I do not like the idea of owning Dutch products.
- Whenever available, I would prefer to buy products that made in the Netherlands.

Consumer Ethnocentrism *(modified from Nijssen and Douglas 2008; Shimp and Sharma 1987; Steenkamp, Ter Hofstede, and Wedel 1999) ($\bar{X} = 2.52$, $S = 1.78$)*

- Purchasing foreign-made products is un-Dutch.
- It is not right to purchase foreign products, because it puts Dutch people out of jobs.
- We should purchase products manufactured in Holland instead of letting other countries get rich off of us.
- We should buy from foreign countries only those products that we cannot obtain within our own country.
- Dutch consumers who purchase products made in other countries are responsible for putting their fellow Dutchmen out of work.

Consumer Disidentification (CDI) *(newly developed scale)*

- In general, I dislike the consumption culture of the Dutch consumers.
- It is good if they say something bad about Dutch consumers.
- I object to being seen as just another Dutch consumer.
- I always tend to not shop in the same places as the Dutch.
- Generally, I do not want to consume like the Dutch.
- I sometimes feel uncomfortable if people think I buy the same as the Dutch do.

Acculturation *(Laroche et al. 2007) ($\bar{X} = 2.85$, $S = 1.19$)*

- I consider myself to be Dutch.
- I would like to be known as "Dutch."
- I feel very attached to all aspects of the Dutch culture.

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[6] I thank a reviewer for this suggestion.

***Ethnic Identification** (Laroche et al 2007) ($\bar{X}$ = 3 49, S = 1.22)*

- I consider myself to be Turkish
- I feel very proud of my Turkish cultural background
- I think of myself as Turkish first and Dutch second
- The Turkish culture has the most positive impact on my life
- I would like to be known as Turkish
- I am still very attached to the Turkish culture

***National Disidentification** (Verkuyten and Yıldız 2007) ($\bar{X}$ = 3 96, S = 1.22)*

- I would never say "we Dutch"
- I certainly do not want to see myself as Dutch
- I always have the tendency to distance myself from the Dutch
- Actually, I do not want to have anything to do with the Dutch
- I never feel addressed when they are saying something about the Netherlands and the Dutch

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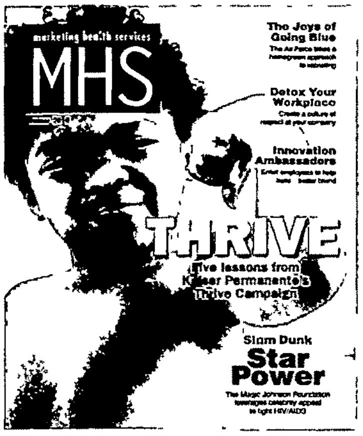

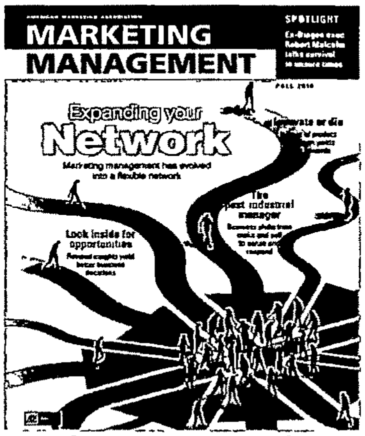

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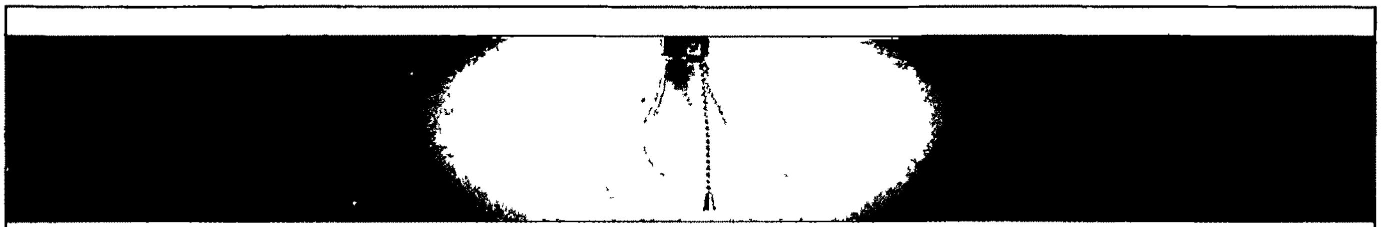

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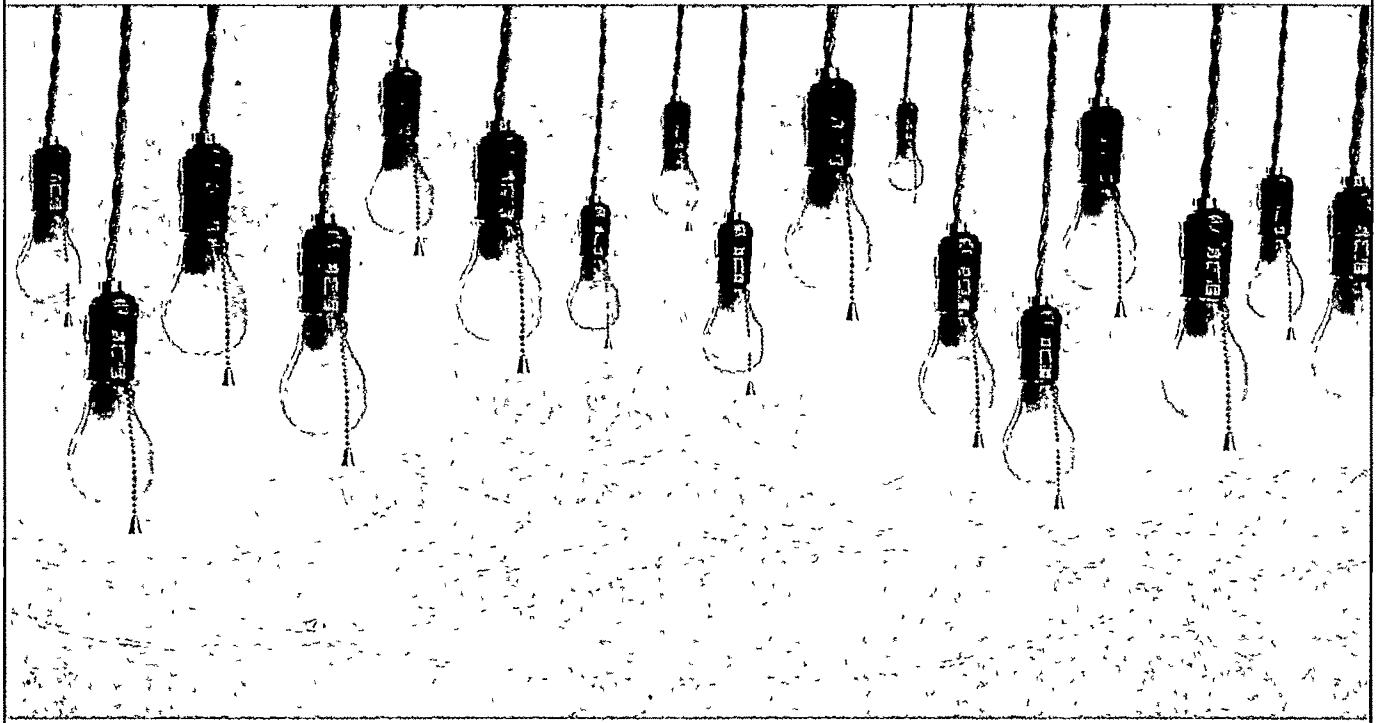

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75th ANNIVERSARY
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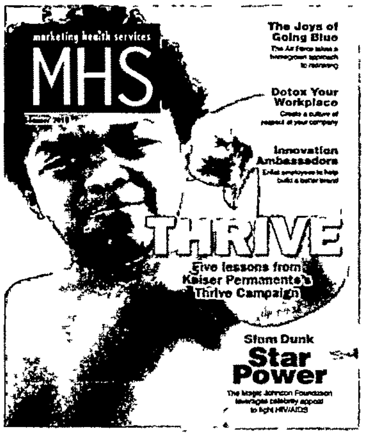

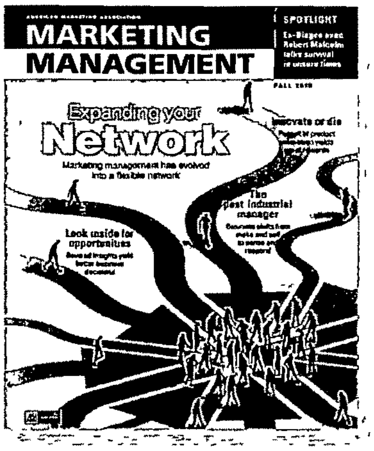

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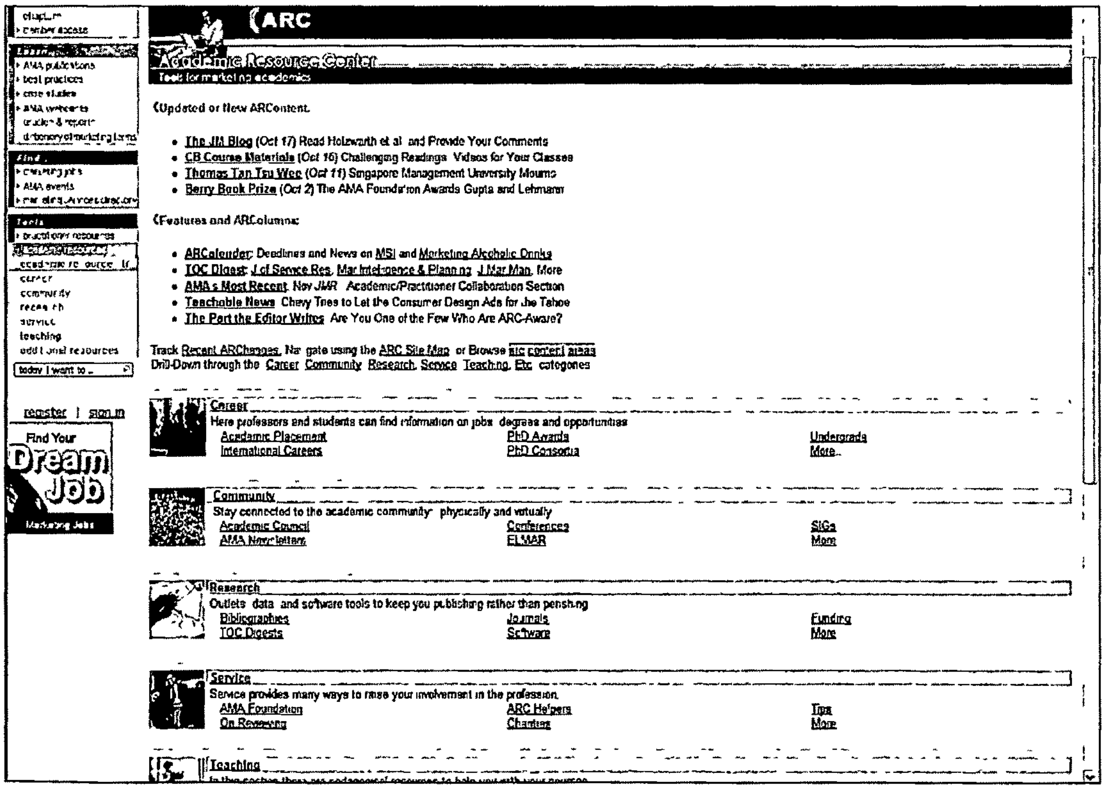

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Erratum

This erratum serves to correct a typographical error in the results reported in Figures 2 and 3 of the article "Marketing in the C-Suite A Study of Chief Marketing Officer Power in Firms' Top Management Teams" (January 2011, pp 60–77) The legends for the dashed lines in Figures 2 and 3 list the p-values as $p > 01$ This should actually read $p > 10$

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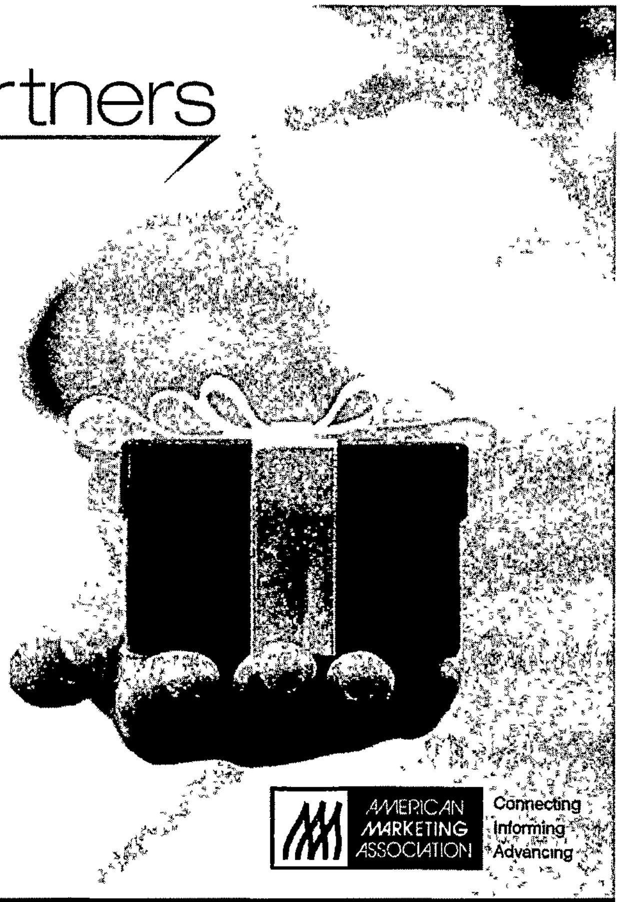

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Crina O. Tarasi, Ruth N. Bolton, Michael D. Hutt, & Beth A. Walker

Balancing Risk and Return in a Customer Portfolio

Marketing managers can increase shareholder value by structuring a customer portfolio to reduce the vulnerability and volatility of cash flows This article demonstrates how financial portfolio theory provides an organizing framework for (1) diagnosing the variability in a customer portfolio, (2) assessing the complementarity/similarity of market segments, (3) exploring market segment weights in an optimized portfolio, and (4) isolating the reward on variability that individual customers or segments provide Using a seven-year series of customer data from a large business-to-business firm, the authors demonstrate how market segments can be characterized in terms of risk and return Next, they identify the firm's efficient portfolio and test it against (1) its current portfolio and (2) a hypothetical profit maximization portfolio Then, using forward- and back-testing, the authors show that the efficient portfolio has consistently lower variability than the existing customer mix and the profit maximization portfolio The authors provide guidelines for incorporating a risk overlay into established customer management frameworks The approach is especially well suited for business-to-business firms that serve market segments drawn from diverse sectors of the economy

Keywords customer portfolio management, market-based assets, financial portfolio theory, return on marketing, market segmentation

> The advantage of knowing about risks is that we can change our behavior to avoid them Optimal behavior takes risks that are worthwhile (Engle 2004, p 405)

Although risk management is central to financial portfolio theory and occupies much of chief financial officers' time, researchers have given sparse attention to risk in the theory and practice of market segmentation and customer portfolio management The existing portfolio of most firms reflects incremental and uncoordinated decisions from the past, when they gave little attention to how newly acquired customers contributed to the profitability and risk of the entire portfolio For example, Homburg, Steiner, and Totzek (2009) find that firms tend to overestimate the value of top-tier customers and underestimate that of bottom-tier customers In a similar vein, Dhar and Glazer (2003, p 88) observe that few companies consider "whether all of their individually desirable customers are, from the standpoint of risk, desirable collectively" This practice is at odds with financial portfolio theory, which posits that although assets are selected individually, performance is measured on the entire portfolio, in which there is a trade-off between risk and return (Markowitz 1952) We theorize that, like a financial portfolio, a customer portfolio is formed by making choices among market-based assets (i e , customers) that present different risk–reward characteristics and allocating resources to optimize performance (Gupta and Lehmann 2005, Srivastava, Shervani, and Fahey 1998)

The purpose of our research is to explore how financial principles of diversification and the tenets of financial portfolio theory can be effectively applied to manage a firm's customer portfolio We demonstrate how fundamental tools of analysis that professional investors use in constructing and managing a stock portfolio can be adapted and used to enrich a firm's market segmentation and customer portfolio decisions First, we aim to identify risk that can (and should) be divested away because firms do not reap greater returns from assuming it and (instead) suffer losses when market conditions change Second, we attempt to identify ways to construct efficient customer portfolios Third, we build on these components to develop an actionable approach that, by looking beyond the returns from individual customers, exploits the synergies of a diverse customer base characterized by heterogeneous risk–return profiles and provides a new approach for managing a firm's market-based assets

Cardozo and Smith's (1983) initial application of financial portfolio theory to product portfolio decisions spawned criticism from Devinney, Stewart, and Shocker (1985), who identify key differences between financial and product investment decisions, arguing that crucial assumptions of the theory were violated (see Cardozo and Smith's [1985] reply) However, recent research has demonstrated the potential insights that financial portfolio theory can contribute to customer portfolio management Dhar and Glazer

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© 2011, American Marketing Association
ISSN 0022-2429 (print), 1547-7185 (electronic)

(2003) describe the importance of measuring the riskiness of customers (i.e., customer beta) and illustrate how a firm can maximize returns by acquiring or retaining particular customers or market segments on the basis of how their spending patterns contribute to the diversification of the cash flow of the overall customer portfolio.

Ryals (2002, 2003) also adopts a financial theory perspective to examine the risk and return characteristics of a customer portfolio and describe how a customer relationship scorecard can be used to assess customer risk. Likewise, Buhl and Heinrich (2008) offer a quantitative model based on financial portfolio theory that (1) considers the customer lifetime value (CLV) in addition to the associated risks of customer segments and (2) provides a method for adding and subtracting market segments. Using a case study from the financial services industry, they test the model by using the average annual incomes of key customer segments (e.g., lawyers, physicians) as an indicator of cash flows and demonstrate how the optimal portfolio provides both higher utility and better risk diversification than the existing portfolio.

This study makes the following contributions to customer portfolio theory and practice. First, we build on past research to show theoretically and empirically how to make a nuanced assessment of customer value by calculating the customer beta (Buhl and Heinrich 2008; Dhar and Glazer 2003) and contribute a new metric for customer portfolio management: the customer reward ratio. Customer beta provides a relative measure of the sensitivity of an individual customer's cash flow return to that of the firm's current customer portfolio. By adjusting for variability, the customer reward ratio, drawn from Sharpe's (1994) work, takes into account the risk–reward trade-off associated with the customer.

Second, the study evaluates the extent to which classic market segmentation variables (e.g., demographics, firmographics) can be used to predict cash flow characteristics (i.e., risk–return profiles) of customers so that managers can assess how potential (and existing) customers might contribute to the customer portfolio. Note that unlike some prior research that controls for customer heterogeneity (Niraj, Gupta, and Narasimhan 2001; Venkatesan and Kumar 2004), our approach evaluates and exploits customer heterogeneity to improve business performance.

Third, the current study is responsive to calls for research that examines the financial impact of customer portfolio management decisions (e.g., Rust et al. 2004). We show conceptually and empirically how a firm can identify synergies among customers and assemble the optimal mix of customers by constructing an efficient frontier for customer portfolios. The efficient frontier describes alternative optimal customer portfolios—those characterized by minimum risk for a certain level of return or maximum return for a certain level of risk. Finally, Tuli, Bharadwaj, and Kohli (2010) provide evidence that the number and types of ties a company builds with its best customers not only ensures higher revenue but also reduces the variability of their purchases. We extend their work by demonstrating that the firm can manage its portfolio of customer relationships to control the overall variability of its cash flow.

We test the feasibility of applying key financial concepts to customer portfolios by implementing them using a seven-year series of customer data from a large business-to-business company. We begin by exploring whether we can segment the firm's customer base in ways that are comparable with financial asset classification. Then, we identify the firm's efficient customer portfolio and test it against (1) its current portfolio and (2) a hypothetical profit-optimization portfolio. Our results show that customers exhibit substantial differences in their risk–return profiles and that clustering techniques can be used to identify market segments for building efficient portfolios. Most important, we demonstrate that the firm's efficient portfolio has constantly lower variability than the existing customer mix and the profit maximization portfolio and that its profit performance is superior in the long run.

Conceptual Framework

This section reviews financial portfolio theory and conceptualizes how key financial constructs can be applied to customer portfolios. Then, we describe how these financial constructs can be calculated from customer purchase history data. Next, we turn to how firms can identify the most desirable customers by assessing the rate of reward on risk for each customer. Last, we address how firms can use these constructs and measures to segment their customer bases in ways that are comparable with financial asset classification.

Financial Portfolio Theory

Financial portfolio theory describes how investors can construct portfolios to maximize return according to a given level of market risk, emphasizing that risk is an inherent part of greater reward (Markowitz 1952). In a stock portfolio, the lower the total correlation of a stock with the total return, the more desirable the particular stock is to the portfolio. For example, stocks drawn from different industries, different countries, and different-sized companies are affected by environmental and economic changes in specific ways (Niemira and Klein 1994). Because many market changes cannot be anticipated, diversification ensures that the portfolio includes positive cash flow opportunities and smoothes out potentially negative cash flows. In terms of the variability and return of each asset, the optimal (efficient) portfolio is considered the one that has the least risk for a desired level of return or the highest level of return for a certain level of risk. Any other portfolio would be suboptimal. The set of efficient portfolios form the efficient frontier, which borders the set of all possible portfolios (Markowitz 1987).

Among the criticisms of financial portfolio theory is the assumption that asset returns are normally distributed, although large swings in the market occur far more frequently than the normal distribution would predict. For example, the S&P 500 stock index has experienced a three-standard-deviation negative monthly return event ten times since 1926, though a normal distribution would predict such extreme returns perhaps one or two times (Kaplan 2009). Another criticism centers on the assumption that correlations between assets are stable. However, during periods of market stress, assets that were previously found to be uncorrelated can suddenly move in lockstep (e.g., Hubbard 2009).

Criticism has also been leveled against the efficient portfolio concept. For example, DeMiguel, Garlappi, and Uppal (2007) evaluate 14 optimal portfolio models advanced in the finance literature, which are based largely on the capital asset pricing model (Sharpe, Alexander, and Bailey 1999), and find that none is better than a naive approach, in which an investor allocates a fraction of wealth to each of the assets available for investment. However, by drawing on financial portfolio theory and defining the market portfolio as the existing customer base of a firm, our focus differs from the capital asset pricing model (for a critique in the context of customer portfolios, see Buhl and Heinrich 2008).

Despite these criticisms, financial portfolio theory "plays a role in almost every area of financial practice and can be a useful tool for many important managerial decisions" (Grinblatt and Titman 2002, p. 97). In turn, the theory has been used to inform economic development strategies at multiple levels of analysis. By applying financial portfolio theory to regional economics, Conroy (1974) introduces a method for measuring economic diversification that has spawned a rich research tradition in the regional science literature (for a review, see Dissart 2003). In this context, a region represents a portfolio of assets (industry sectors) that make up the local economy, and each industry yields a return (employment) but also entails a risk (employment volatility).

Researchers have used this portfolio management framework to study the growth–instability trade-offs of metropolitan areas (e.g., Conroy 1974), individual states' and countries' economies (e.g., Lande 1994), and international regions, including Western Europe (Chandra 2003). For example, Lande (1994) examines the economic structure of selected states, identifying industry sectors that contribute to employment growth and stability in an optimal portfolio. Collectively, studies from this research tradition lend strong support to our view that financial portfolio theory can provide a valuable framework for evaluating and managing a customer portfolio, particularly for business-to-business firms that serve customers drawn from diverse industry sectors.

Cash Flow Stability and Firm Value

Extending the work of Srivastava, Shervani, and Fahey (1998), we theorize that the market-based assets of a firm include distinct customer asset classes, which are characterized by differing degrees of cash flow variability and vulnerability. Customer asset classes represent the market segments that constitute the existing customer base and embody the outcomes of relationships between the firm and its customers. Investment portfolio decisions involve choices within and among various asset classes of stocks and bonds; in contrast, customer portfolio decisions involve choices within and among distinct customer asset classes (e.g., governance type, size, industry) that encompass both new and existing customers in the served market and present different risk–return profiles for the firm. In support, Gupta and Lehman (2005, p. 8) assert that customers are indeed assets, and therefore customer-related expenditures "should be treated as investments rather than expenses." They demonstrate that the value of the customer base provides a strong guideline for firm value.

In choosing among customers to add to a portfolio, the less a customer's purchasing behavior promises to be like that of the current portfolio, the stronger is its contribution to the stability and predictability of the portfolio; conversely, the more the behavior is like that of the existing portfolio, the weaker is its contribution. Therefore, the attractiveness of a customer hinges not only on the size and frequency of purchases but also on the degree to which the customer's pattern of purchases covaries with those of other customers in the portfolio. The declining cash flow from one customer may be offset by increased returns from another. For example, during a recession, a transportation company might experience a decline in revenue from discretionary retailers that is offset by an increase from discount retailers or declining revenue from auto producers that is partially offset by a growing revenue stream from after-market auto parts retailers.

By developing a risk-adjusted customer portfolio to achieve profit targets, marketing managers can contribute to firm value. Because investors favor stable over volatile earnings (Ang, Chen, and Xing 2006; Srinivasan and Hanssens 2009) and cash flows that are more stable and predictable reduce working capital needs (Rao and Bharadwaj 2008; Srivastava, Shervani, and Fahey 1998), firms can enhance shareholder value by reducing the vulnerability and volatility of cash flows from the customer portfolio.

Customer Portfolios Versus Financial Portfolios

As the preceding section indicates, customers, like stocks, represent risky assets, and the cost of acquiring them should reflect the cash flow they are expected to generate over time. However, we acknowledge that key differences exist between financial and customer portfolios with respect to the nature of the assets, returns, and uncertainty.[1]

Assets. Because customer portfolio decisions represent only one of many levels of marketing investment a firm makes, they are embedded in a far more complex investment management framework than financial portfolio decisions. Marketing investments are made to enhance the value of brand assets through, for example, product research and development, channel support, and advertising. To enhance the value of customer assets, the firm gives special emphasis to investments in customer relationship building by using elements of the marketing promotion mix (e.g., communications, sales force, customer–firm interactions; Ambler et al. 2002).

Financial assets can be identified and readily purchased; in contrast, particular customers can be targeted, but there is no assurance that the firm will be successful in attracting them to the portfolio. Likewise, individual customer relationships take time to develop and usually require continuing investments (Johnson and Selnes 2004; Kumar 2008). Therefore, an existing customer asset's price is the retention costs represented by these continuing expenditures, and the a new customer asset's price is the associated acquisition costs Compared with a customer portfolio, investors can also readily make portfolio adjustments by selling assets at a market price and changing the proportion (weight) assigned to particular asset classes In contrast, there is no liquid market for customer assets (Kundisch, Sackmann, and Ruch 2008), and customer divestment can be costly and represents a strategic option that must be exercised sparingly (Mittal, Sarkees, and Murshed 2008)

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[1] We thank an anonymous reviewer for suggesting this organizational scheme and focus.

Financial assets can be purchased in parcels of any size, in contrast, customer assets are not infinitely divisible, and major portfolio adjustments can be costly and difficult to implement in a timely manner An investor who wants to increase the portfolio weighting of a particular industry sector can readily implement this change by selling stocks from one sector (e g , energy) and buying stocks in another (e g , technology) To make corresponding changes in the weighting of market segments within the customer portfolio, a manager faces a longer time horizon, new strategy priorities, and a host of rigidities that the current strategy imposes To illustrate, reorganizing the customer portfolio might require a realignment of sales and marketing communication strategies, highlighting the higher transaction costs associated with customer versus financial portfolios

Return For an investor, return is the change in value of the investment, which includes capital appreciation (or loss) plus the cash yield Unlike financial assets, customers can be interconnected and contribute to the return of a market segment through social processes, such as positive word of mouth (Ryals 2003) Return for the customer portfolio is the cash flow and profit (revenue minus cost to serve) that accrue to the firm from investments made in individual customers and market segments The firm makes a host of other marketing investments that enrich the customer relationship strategy but are not directly captured in the cost-to-serve calculation To illustrate, the decision to increase the weighting of particular market segments in a customer portfolio might require corresponding investments in new product development or service support that go beyond the direct customer costs that we consider

In a financial portfolio, the rate of return is independent of the amount invested In contrast, a distinct difference between customer and financial portfolios is that the returns from investing in customers are likely to be nonlinear Specifically, the amount of investment has a nonlinear relationship with the "return on customer," which means, for example, that small investments might be insufficient to attract or retain an individual customer or market segment

Managerial control is among the unique characteristics that distinguish customer investments from financial investments (Devinney and Stewart 1988) For example, a firm can increase sales and reduce sales variability by forging multiple types of relationship ties with a customer organization (Tuli, Bharadwaj, and Kohli 2010) or enhance returns by identifying elements of its customer management effort that provide the greatest marginal return on additional investments (Bowman and Narayandas 2004) When an investor chooses an optimal weight for a particular asset class and purchases the associated securities, there is no impact on the risk and return for that asset class In contrast, managers can exercise a significant degree of control over the risk and return characteristics of the customer portfolio For example, the weight assigned to a market segment can affect the performance of that segment because of increasing or decreasing returns to scale Some market segments complement the economies of the seller's business better than others, and some customers within these segments are less costly to serve than others

Uncertainty The difference between the expected and actual realized returns of an asset constitutes uncertainty in financial portfolio theory Investment uncertainty is characterized by the variability, or risk, in the return of a security—namely, the deviation of the return from expected value during the holding period Then firms use the variations in the returns of securities to estimate the covariance among the array of assets that constitute a portfolio In the customer portfolio context, the deviation of customer cash flow and profit from their expected values provides a measure of risk However, there are other sources of uncertainty that are unique to a customer portfolio Unlike financial assets, which can be retained as long as the investor desires, customers can take independent actions and defect or shift a share of their total purchases to a competitor Therefore, customer cash flow stability provides a narrow measure of the strength of a customer relationship

Customer portfolio applications To capitalize on the strength of financial portfolio analysis while managing the associated constraints and limitations, a firm can examine the risk–return characteristics and structure of its current customer portfolio Specifically, we demonstrate how portfolio theory provides an organizing framework and supporting methodology for (1) diagnosing the variability in the overall customer portfolio, (2) assessing the complementarity/similarity of market segments, (3) exploring the weights of market segments in an optimized portfolio, and (4) gauging the reward on variability that individual customers or segments provide

In applying financial theory to customer portfolio management, some key limitations must be understood and managed First, during periods of severe economic stress, market segments that were previously uncorrelated can suddenly move in tandem, limiting the benefits of diversification Second, our approach determines how the current customer base might be reconfigured into an optimal portfolio, but some of these adjustments are costly and raise a host of strategic issues beyond the scope of our analysis The optimal portfolio can best be viewed as an ideal customer base that managers can evaluate, revise, and assemble over time Therefore, the optimization process should include a qualitative overlay based on managerial judgment to arrive at recommended resource allocations by segment In Markowitz's (1952, p 91) seminal work, he emphasizes that the statistical results that issue from his approach should be viewed as tentative and then enriched by judgment "on the basis of factors or nuances not taken into account by the formal computations"

Third, our analysis examines the cash flow and profit of individual customers but does not assess other important customer metrics, including customer satisfaction, loyalty, or share of wallet. Likewise, we do not consider the host of factors that influence individual customer profitability, such as demand stimulating the firm's efforts or competitive behavior (Bowman and Narayandas 2004). To that end, our conceptualization of customer portfolio risk complements, rather than replaces, other approaches from the customer management research tradition that examine other types of risk, such as the risk of defection and the probability of achieving CLV outcomes (e.g., Blattberg, Getz, and Thomas 2001; Bolton, Lemon, and Verhoef 2008; Rust, Lemon, and Zeithaml 2004).

Appropriate market contexts. Our approach specifically applies to situations in which there are meaningful differences in variability across the market segments that constitute a firm's customer portfolio. Therefore, we believe the approach is best suited for the business market, in which these conditions are often present. Compared with consumer packaged goods contexts, business marketers tend to allocate greater proportions of their sales and marketing resources at the individual customer level. Likewise, many business-to-business firms serve market segments drawn from diverse sectors of the economy, each of which demonstrate a distinct demand function (Dickson and Ginter 1987). The approach might also be appropriate for business-to-consumer firms that have direct contact with the customer, such as telecommunications and financial services companies. However, the approach will be less suitable in these or other situations if market segments tend to be highly correlated.

Customer Portfolio: Risk and Reward

Markowitz (1987) measures risk using the variability of the price of the asset, which represents a good proxy for the probability of encountering an unexpected outcome. The risk and return associated with the cash flow of each customer can be computed using purchase history data. Historic analyses are based on the assumption that the future will be like the past (Sharpe, Alexander, and Bailey 1999), and variance is difficult to forecast. However, we assume that the relationships and correlations of the past are sufficiently stable and that past variability is a good proxy for future variability (Balagopal and Gilliland 2005; Chan, Karceski, and Lakonishok 1999).

Cash flow variability and overall customer portfolio risk. We define "risk" as volatility or variability associated with cash flow, and it is traditionally estimated using standard deviation or variance. The formula for computing the variance of customer A, V_A, is $V_A = [\Sigma_{i=1}^{N_A}(x_{Ai} - x_A)^2]/(N_A - 1)$, and standard deviation is $\sigma_A = V_A^{1/2}$, where x_{Ai} is the cash flow for customer A in the ith period in which a cash flow occurred, x_A is the average value of cash flow from customer A for the N_A periods, and N_A is the number of periods in which a cash flow from customer A occurred.

To obtain a standardized measure of variance that corrects for differences in the average levels of cash flows across customers, we compute the coefficient of variation as follows:

$$Cv = \sigma_A/x_A.$$

We compute the risk of the entire portfolio V_p using a similar formula, except that the cash flow used is the average of all customer cash flows (Markowitz 1987):

$$V_P = \frac{\sum_{j=1}^{N}(x_j - x_P)^2}{N - 1}, \quad (1)$$

where x_j is the cash flow from all customers active in period j, $x_j = \Sigma_1^{M_j} x_{jk}$ (where M_j is the number of customers active in period j and x_{jk} is the cash flow from firm k in period j), N is the number of periods considered, and x_p is the average value of cash flow from the customer portfolio for the N periods and M firms, $x_P = (\Sigma_{j=1}^{N} x_j)/(N - 1)$. To compare the performance of portfolios with different levels of performance (e.g., different means), we standardize the values by dividing the monthly values by the mean of the portfolio before computing variability.

Customer Beta and Customer Reward Ratio

Customer beta. To identify the most desirable customers, we need a reliable measure of the consistency of returns for an individual customer compared with a reference customer or portfolio. In finance applications, beta—a measure of the volatility of an investment—is computed relative to an appropriate asset class, usually the market portfolio. The market portfolio consists of all assets, with the weight of each held in proportion to the total market value. Because the determination of a comparable portfolio that includes all customer assets across all firms represents a daunting, if not impossible, task, we define the market portfolio as the firm's current customer base, in line with Buhl and Heinrich (2008), Dhar and Glazer (2003), and Ryals (2002).

In the financial context, the market is assumed to be efficient, implying that information is fully and immediately reflected in market prices (Fama 1970; Sharpe, Alexander, and Bailey 1999). In contrast, the customer portfolio is not efficient. For a company, variations in the customer portfolio might reflect the overall performance of certain industries or sectors of the economy. Therefore, rather than using beta to describe the risk of the overall portfolio, customer beta captures the degree to which an individual customer contributes to the risk of the entire portfolio:

$$\beta_i = \frac{cov(x_i, x_P)}{V_P}, \quad (2)$$

where $cov(x_i, x_P)$ is the covariance between the individual customer cash flow and the cash flow of the overall customer portfolio and V_p is the variance of the cash flow for the overall customer portfolio.

Customer reward ratio. In measuring the rate of return on risk of a customer—in other words, the reward for assuming variability—Sharpe's pioneering work (1994; see also 1966) provides the foundation for the customer reward ratio The reward is measured as the return above the risk-free rate

$$(3) \qquad RR_i = \frac{R_i - R_f}{\sigma_i},$$

where RR_i represents the customer reward ratio, R_i represents the return for customer i and R_f represents the return for the risk-free customer proxy, and σ_i represents the standard deviation of the return When there is no risk-free asset available, $R_f = 0$, and the equation is simplified to

$$(4) \qquad RR_i = \frac{R_i}{\sigma_i}$$

Finding a risk-free proxy for the customer portfolio (the equivalent of treasury bills, the benchmark for risk-free investments) is often possible For example, some companies have a set of low-return customers that they might prefer not to serve, but they choose to do so to fill spare capacity and achieve a modest return Although not directly targeted, these customers provide a benchmark return

If one of the goals in designing a customer portfolio is to minimize the risk for a certain level of return, a key question becomes, What is the level of return that a customer or segment with a certain level of variability provides? The customer reward ratio provides the means for evaluating the risk–reward trade-offs of customers in the portfolio We provide a measure for evaluating the relative attractiveness of customers with different levels of return and variability When customers possess similar return or variability characteristics, distinguishing the most desirable customer is straightforward (For the same level of risk, the customer with the highest return is preferred, and for the same level of return, the customer with the lowest variability is preferred, all else being equal) However, when both risk and return are different, the customer reward ratio provides the means to identify the most attractive customer

Segmenting or Classifying Customers According to Risk

In financial markets, assets are grouped into categories that share certain risk–return and variability characteristics (e g , blue chip stocks, bonds, treasury bills) We can group customers into segments using cluster analysis according to the monthly variability in their cash flows and then observe whether the resultant segments share other characteristics that are meaningful and actionable in the marketplace, such as demographics and firmographics In other words, two key questions in determining the feasibility for building an efficient customer portfolio include the following (1) Are there significant differences in variability and rate of return across market segments? and (2) Can we identify the differences in variability associated with specific customer characteristics (e g , size of the company, industry)? If the answer to both questions is yes, we can build efficient portfolios according to the risk–return profiles of clusters rather than individual customers (for which cash flows can be somewhat unpredictable) Therefore, we first test whether there are significant differences in cash flow variability among different segments that can be characterized in ways that are normally used for segmentation Then we attempt to construct an efficient customer portfolio and evaluate its performance

Research Design

Study Context

We test the applicability of our approach to customer portfolios using purchase history data from a business-to-business company with a diverse customer base[2] The client company provided monthly sales and profit data (earnings before interest and taxes, hereinafter, EBIT) for all customers for a seven-year period The company's records also contained information for each customer regarding number of product lines purchased, size of business, geographic locations, and industry sector The company had served more than 10,000 customers in the seven years However, we focused on the top 250 customers from each of the years 2001–2007, which amounts to 516 unique customers and 98% of all sales We supplemented the cooperating company's purchase records with information from public databases Specifically, 456 of the 516 business customers were uniquely identified using Dun & Bradstreet codes, so that we could record the number of employees and sales revenues for specific sites and the entire company/customer

Analysis Plan

In Stage 1, before developing the efficient portfolio, we want to assess whether meaningful differences in variability exist among customer segments Stage 2 centers on segmenting (i e , clustering) customers according to purchasing patterns (using standardized monthly purchases over six years) rather than using an a priori segmentation scheme Next, we identify the segments by examining their financial and nonfinancial characteristics For the segmentation to be actionable for managers, customers in the same segments must share common characteristics, which can be used to identify similar (potential) customers

Stage 3 centers on identifying the efficient frontier and building an efficient customer portfolio using the variability-based segmentation scheme identified in Stage 2 to develop a diversified portfolio of customers, which should outperform value maximization portfolios in the long run Stage 4 involves an evaluation of the diversified portfolio's performance The firm's business performance should be enhanced in two ways higher returns or reduced risk (or both) Thus, we evaluate the success of our approach by comparing the scenario reflecting the outcomes of the efficient frontier with the "actual" risk–return profile for the following year and a profit maximization scenario—all calculated using the holdout sample data

Stage 5 makes necessary adjustments in the composition of the customer portfolio by reexamining the performance (purchases) of current customers, individually and by segment Using customer reward ratios and customer beta indicators, we can asses the riskiness of individual cus-

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[2] To respect confidentiality agreements, we scaled the numbers

tomers and gauge their impact on the overall portfolio. Using this information—and maintaining a perspective of company goals and the external environment—marketing managers can decide on a case-by-case basis whether it is desirable to attract more business from the specific customer or to identify segments with similar characteristics to pursue in the future.

Stage 1: Assessing Differences in Variability Among Customer Segments

Our assessment is based on an examination of the sales over time from different market segments defined on an a priori basis. Specifically, we use the first six years of purchase history data to investigate whether there are significant differences in coefficients of variation across market segments defined by relationship type (contractual vs. noncontractual), size of business, and industry type. Appendix A provides a full discussion of this analysis.

Compared with noncontractual relationships, the analysis indicates that contractual customer relationships have lower variability and their introduction into a customer portfolio reduces the overall variability. Likewise, customers from small and medium-sized businesses (SMBs) have lower variability than large business customers. For the industry analysis, we classified customers using the NAICS (North American Industrial Classification System) combined with Standard & Poor's (S&P) sector classification.[3] Appendix B provides customer reward ratios, betas, and coefficients of variation of customer purchases over time in different industry sectors. The industry analysis was inconclusive because many of the industries were represented by only a few large customers; however, the trends were visibly distinctive.

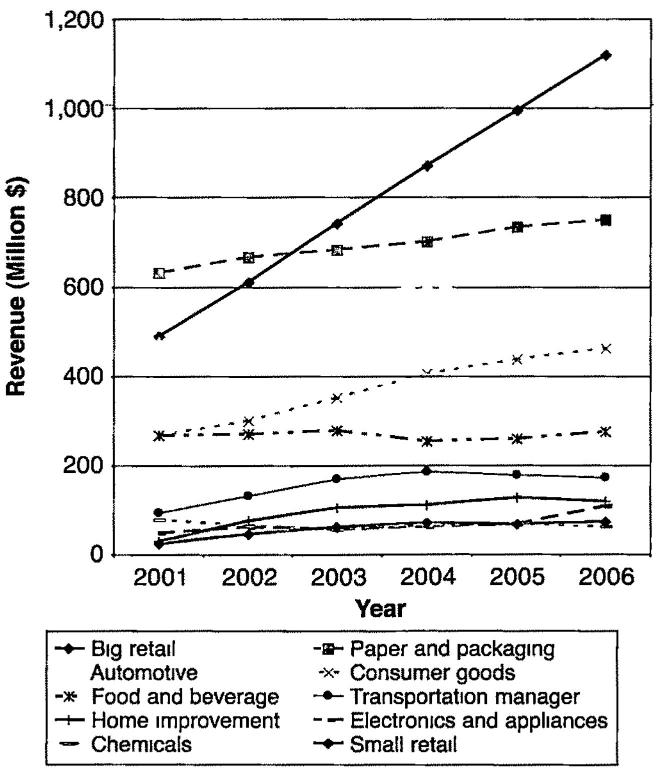
Figure 1 provides a graph of sales revenue over time for the ten industry categories of customers that generated the highest average sales. For example, observe that the retail sector exhibits a pronounced growth pattern over six years, while all others exhibit more modest growth, with the auto sector and transportation manager customers registering a noticeable decline after 2004.

On the basis of this analysis, we conclude that there are statistically significant differences in sales variability for customers with contractual versus noncontractual relationships and between customers of different sizes. There are also meaningful differences in sales trends for customers from different industries. Therefore, we believe the foundation is in place to identify market segments characterized by different risk levels (e.g., betas, customer reward ratios) and to build an efficient customer portfolio for the cooperating company.

Stage 2: Transactional Segmentation

Market segments should be characterized by different demand functions and purchase patterns (e.g., Dickson and Ginter 1987). Market segmentation based on similarities or differences in purchasing patterns is called transactional segmentation, which has been used in financial services firms to determine patterns that signal defections (Pearson and Gessner 1999).

FIGURE 1
Industry Trends



Each customer has unique and common characteristics, so we utilized a hierarchical clustering analysis of the monthly purchase data for each customer to observe the common characteristics. The procedure (PROC CLUSTER, in SAS, using the average linkage method) grouped customers according to squared distances, in which distance was measured by the monthly cash flow levels (standardized revenue).[4] Because there are 72 months of observation in the data, each customer is characterized by 72 variables. A six-cluster solution was robust to method changes, providing support for a solution that is useful for managerial action. The six-cluster solution grouped together customers with similar trend characteristics. Comparisons among clusters revealed that even though the statistical techniques were based on cash flow patterns exclusively, the resulting clusters differed in terms of company size, dominant industries, overall variability, customer reward ratios, and betas. Appendix C presents the results of these comparisons, and Figure 2 illustrates the patterns of the clusters.

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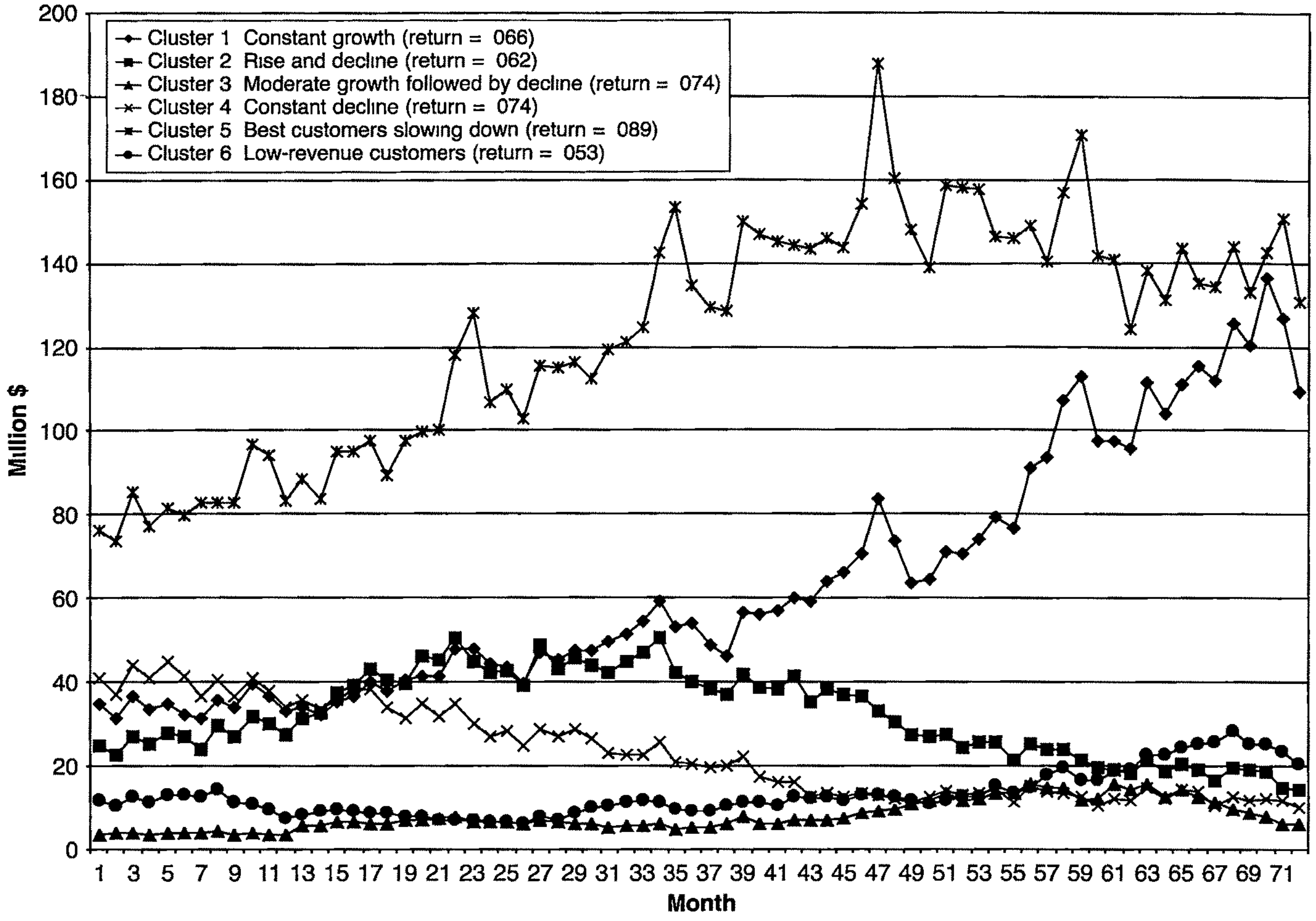
[3] Standard & Poor's identifies ten industry sectors: energy, materials, industrials, consumer discretionary, consumer staples, health care, financials, information technology, telecommunication services, and utilities (Source: "S&P Industry Classification Standard," [accessed June 5, 2009], [available at www2.standardandpoors.com/spf/pdf/index/GICSIndexDocument.PDF]).

[4] We standardized each customer's revenue by dividing the monthly value by the mean revenue for the 72 months. Standardization enables us to cluster by using variability patterns alone, without interference from the size of the customer purchases.

FIGURE 2
Revenue by Cluster



Stage 3: Identifying the Efficient Frontier and Building an Efficient Customer Portfolio

Each cluster has a certain level of return, as Figure 2 shows We computed the return per cluster using profitability data by customer as provided by the sponsoring firm (return = total EBIT per cluster divided by the total revenue per cluster) Using the six clusters, we can now build an efficient portfolio by minimizing the cash flow variability for 2006 given a certain level of return Although we use the data for 2001–2006 to build the clusters, we use 2006 as the reference year—because it is closest to the holdout period (2007)—to compute the efficient frontier We need to identify a set of optimal weights for each of the clusters $X' = [x_1\ x_2\ x_3\ x_4\ x_5\ x_6]$ that minimizes the portfolio variance and that, multiplied by the return per cluster, adds up to the targeted return By varying the expected return, we can draw the entire efficient frontier (Markowitz 1991)

To develop the efficient frontier, we used the quadprog function in MATLAB to minimize variance–covariance matrix for various levels of return (in increments of 2%) The quadprog function is designed to solve quadratic programming problems, in which a covariance matrix is minimized by varying the weights of the parameters, while satisfying certain linear conditions

$$\min \tfrac{1}{2}X^{T}HX, \text{ such that } AX \leq B \text{ and } Aeq\ X = Beq,$$

where X is the vector of weights (X^T is X transposed) and H is the return covariance matrix or the covariance matrix computed using the monthly return for all clusters The inequality $AX \leq B$, where $A = -[I_6]$ (I being the identity matrix) and $B' = [0, 0, 0, 0, 0, 0]$, ensures that all cluster weights are positive The equations $Aeq\ X = Beq$, where $Aeq = [1, 1, 1, 1, 1, 1, r_1, r_2, r_3, r_4, r_5, r_6]$ (with r_1–r_6 being the actual returns for clusters 1 to 6) and $Beq' = [1, R]$ (with R being the target return), ensure that the sum of weights for all clusters is 1 and the sum of the returns for the efficient portfolio matches the desired return Quadratic programming is classically used for mean-variance portfolio selection (Feldstein 1969) The quadprog function uses the medium scale algorithm for this type of problem and involves a two-stage approach It first estimates a feasible point and then generates a sequence of feasible points until convergence occurs [5]

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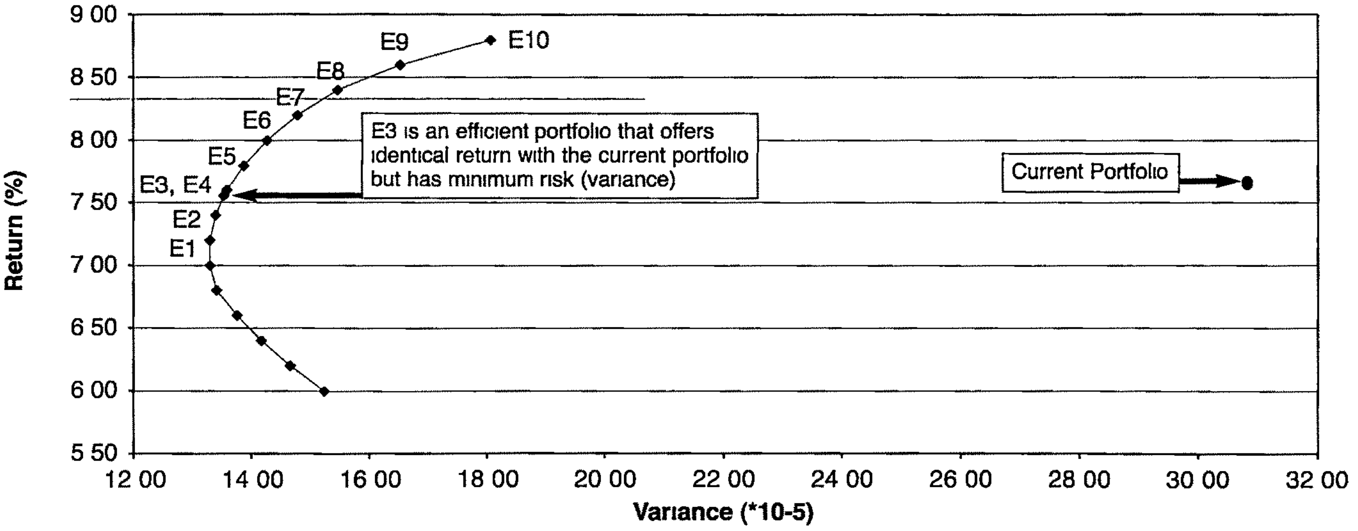
[5] MathWorks (http //www mathworks com/help/toolbox/optim/ug/brnox71 html)

As expected, the efficient portfolios bordered the set of possible portfolios (Markowitz 1959) The efficient portfolio with the lowest risk is Portfolio E1 (see Figure 3 and Table 1), which has a relatively equal representation of all clusters, except Cluster 6 [6] Observe that Cluster 3, which is composed predominantly of small business customers, has the highest representation in this portfolio (26%) The efficient portfolio with the highest return is Portfolio E10, which is dominated by Cluster 5 (92%, see Table 1), the cluster with the highest return

The weights of Cluster 3 (small business customers) in the efficient frontier portfolios vary from 6% in Portfolio E9 to 26% in Portfolio E1 As the percentage of Cluster 3 decreases, the level of risk increases This pattern shows how diversity increases the stability of a portfolio because introducing smaller business customers into a portfolio overweighted with large business customers reduces the risk of the portfolio To have a balanced portfolio, the cooperating company requires a certain percentage of small business customers, but no more than 26% Above 26%, the variability of small business customers outweighs the benefits of diversification From the standpoint of an individual investor buying securities, the stocks of the companies that constitute a firm's efficient customer portfolio would not represent an efficient stock portfolio for that investor because a host of factors influence stock values, including company strategy, new product announcements, operating efficiency, among many others (e g , Srinivasan and Hanssens 2009)

Not only is it computationally more efficient to build the efficient frontier using clusters of customers rather than individual customers, but it is also more actionable for managers An efficient customer portfolio constructed from individual customers might suggest seeking incremental sales from a given customer that far exceed the customer's requirements By selecting customers from clusters, the role

FIGURE 3
The Efficient Frontier Portfolios and Current Portfolio Risk and Return



Notes Portfolio 3 offers identical return to the current portfolio for less then half the variance (43%)

TABLE 1
Evolution of Cluster Weights for the Portfolios on the Efficient Frontier

		Cluster Weights						
Portfolio	Return Rate	X_1	X_2	X_3	X_4	X_5	X_6	Variance (10^{-5})
E1	7 20%	20	22	26	16	16	—	13 30
E2	7 40%	14	20	24	18	24	—	13 39
E3	7 56%	10	18	23	19	31	—	13 53
E4	7 60%	09	17	22	19	32	—	13 58
E5	7 80%	04	14	20	21	41	—	13 87
E6	8 00%	—	11	18	22	49	—	14 26
E7	8 20%	—	05	16	22	57	—	14 78
E8	8 40%	—	—	13	20	67	—	15 46
E9	8 60%	—	—	06	15	79	—	16 52
E10	8 80%	—	—	—	08	92	—	18 06
Current	7 56%	36	06	04	04	43	07	31 47

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[6] Although we introduced Cluster 6 in the analysis, it had zero weight in all the efficient portfolios This cluster was characterized by low return and high variability

of similar characteristics is emphasized, making the identification of potential new customers easier and implementation more straightforward This approach offers managers the choice of either increasing the level of business conducted with current customers in the cluster (if the opportunity exists) or serving new customers with similar characteristics that define the cluster Moreover, from a practical standpoint, managers can even apply this approach at the group (cluster) level if they find it difficult to determine the specific return per customer The risk could be estimated according to the variability of the customer revenue and used in combination with the return per cluster to estimate the efficient portfolio

Stage 4: Testing the Efficient Portfolio

We have constructed an efficient customer portfolio that minimizes variance for the study period We compare the performance of this portfolio with that of a profit maximization portfolio, built using the best customers for 2006 and assuming that the company is able to acquire 25% more customers with the same level of profit as its best customers (which the client company would do if it could)

First, we compare the performance of an efficient portfolio (E5), the actual portfolio and the profit maximization portfolio and "back-test" them for 2001 through 2005[7] A customary practice in finance is to test strategies under historical market conditions to evaluate their viability and effectiveness This method is especially useful to test a portfolio under different economic conditions, given that testing with future data is not an option In Figure 4, Panels A and B, we compare the results for the three portfolios, that is, we compare variability (risk) and actual profits (return)

Using back-testing, we notice that the efficient portfolio constantly has much lower variability than either of the other two portfolios for all six years examined (Figure 4, Panel A) In terms of profit performance, the efficient portfolio outperforms the actual portfolio each year except 2004 and 2005, which were extremely profitable for the company (Figure 4, Panel B) The profit maximization portfolio outperforms the actual and efficient portfolios for just one of the years, 2005 In years of high growth, riskier portfolios are more likely to outperform low-risk portfolios However, for the other years, further out on the horizon from the benchmark year for which the portfolio has been optimized, the efficient portfolio outperforms both the actual and profit

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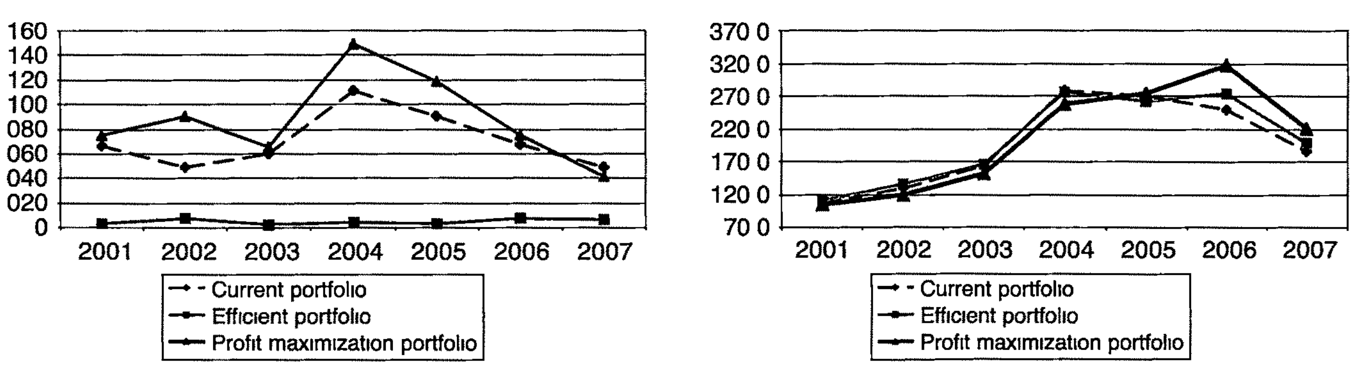
[7] We used the data for 2001–2005 to identify the clusters but not for the efficient frontier

FIGURE 4
Back- and Forward-Testing the Efficient Portfolio (Simulation Results)

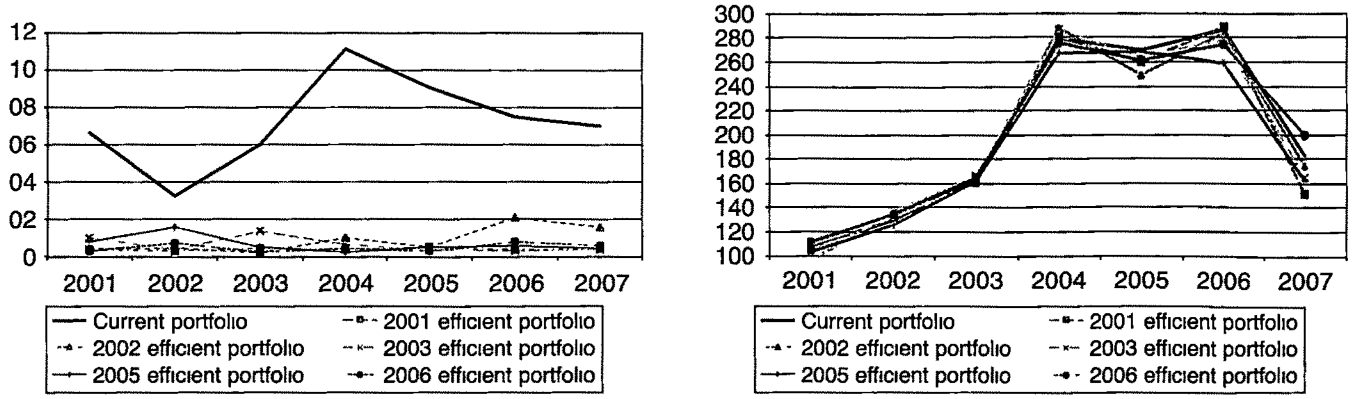


A: Profit Variability by Portfolio

B. Profit by Portfolio (Million $)

C Variability of the Current Customer Portfolio and the Efficient Portfolios Identified Using Annual Data Between 2001 and 2006

D: Profitability of the Current Customer Portfolio and the Efficient Portfolio Identified Using Annual Data Between 2001 and 2006



maximization portfolios, providing evidence for the stability of our method

Second, we compare the three portfolios using forward-testing, that is, we use the data for 2007 that have not been used in any other previous analysis (To do so, we matched the customers that entered the top 250 for the first time in 2007 to clusters using the size of the business, industry profile, and previous purchase history) When comparing 2007 performance, the efficient portfolio outperforms the actual portfolio higher profit and lower variability. The efficient portfolio has lower overall profitability than the profit maximization portfolio, but it has a much lower variability In stable economic conditions, we expect that in the first year (short run), the efficient portfolio might not outperform a profit maximization portfolio

To further test the robustness of the efficient portfolio concept as applied to a customer portfolio, we also built efficient portfolios using the data for each of the years in the 2001–2005 interval and then using data from the remaining years as the holdout sample For example, we built the efficient frontier for 2001 and used 2002–2007 data as the holdout sample Except for 2004, when the company implemented midyear accounting changes related to the measurement of customer profitability, we could fully identify the efficient frontier According to the simulation results, each efficient portfolio had similar benefits The variability was constantly much smaller for all the years examined while controlling for the mean (Figure 4, Panel C) and in absolute value (Figure 5), though the profitability was comparable with that of the current portfolio (Figure 4, Panel D) These results show the stability of the solutions computed for different years, in simulations, they all manifested a similar level of profitability and substantially lower variability

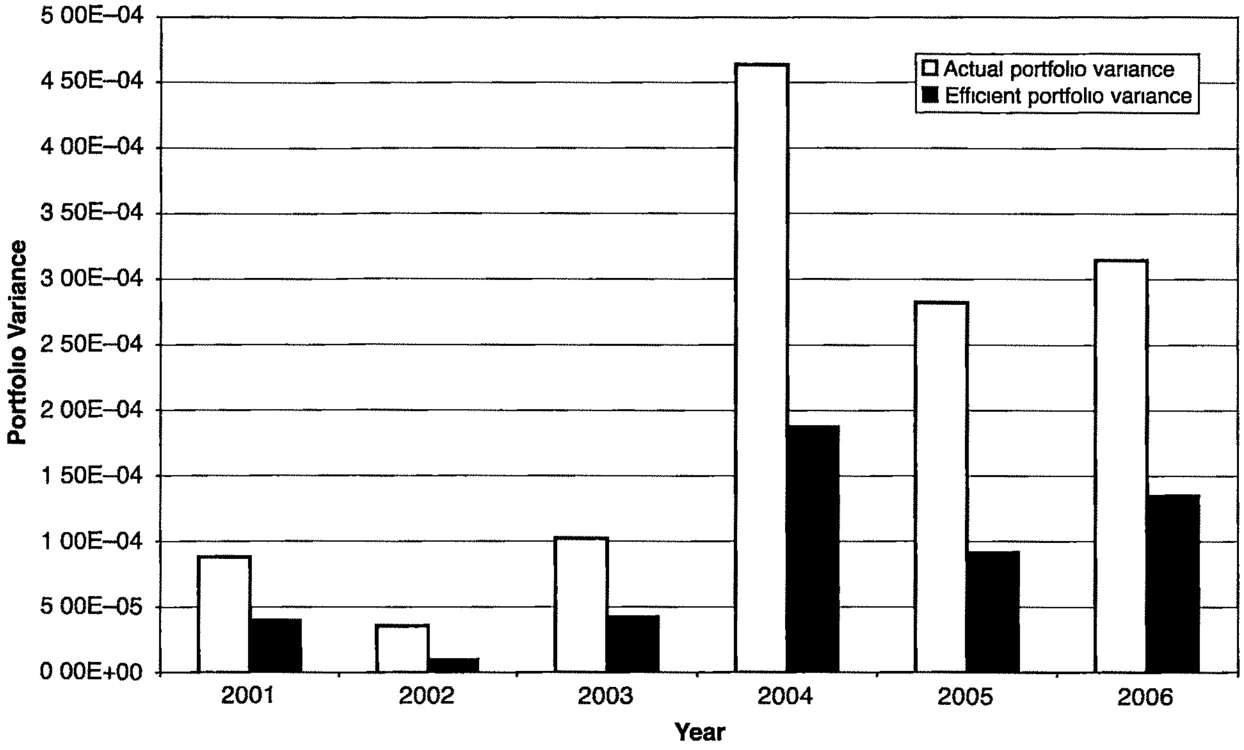
Stage 5: Revising the Current Customer Portfolio Toward an Efficient Portfolio

Thus far, our analysis has centered on groups of customers that share certain characteristics However, inside clusters, some customers might be more desirable than others, and given limited resources, the firm should prioritize its customer retention/acquisition efforts This issue should be considered when the firm reweights its customer portfolio to move toward an optimal composition

Recall that the customer reward ratio can be measured as a function of a risk-free asset (in our case, a risk-free customer proxy) or in absolute terms By incorporating the risk-free asset into the calculation, the customer reward ratio provides a more meaningful measure of the relative attractiveness of alternative customer investments [8] The manager can consider the return provided by investing in the risk-free asset and take into account how a diversified allocation of resources might be more attractive than investing in a single asset

Consider the risk-free asset that a logistics service company might use Transportation managers act as brokers for

FIGURE 5
Absolute Variance Reduction in Efficient Portfolios Versus the Current Portfolio Results



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[8] For example, for a return of 15 and a standard deviation of 10, the customer reward ratio without the risk-free asset is 1 5 (15/10), with a risk-free asset with a return of 3, it is 1 2 (12/10) For an asset with return of 28 and standard deviation of 20, the customer reward ratio without the risk-free asset is 1 4 (28/20, less attractive than the first asset), but taking into account the risk-free rate, the customer reward ratio is 1 25 (25/20, compared with 1 2 for the first example), which is more attractive than the first asset considered

SMBs They are often used by logistics service companies to find customer shipments to fill at least some capacity for return routes from one-way transports For performing this helpful service, they are charged less than most other customers, and their purchases are highly variable Considering them the "risk-free proxy" in computing the reward ratio provides a useful benchmark for a logistics company For firms that produce maintenance and operating supplies, a risk-free proxy might be a segment of large distributors that desire private label products that a firm could produce to fill excess capacity Identifying the risk-free customer proxy for a business requires deep insight into the strategic and daily operations of the business because, ideally, the risk-free customers should be strategically irrelevant and always available for the right price For businesses in which the "strategically irrelevant" customers cannot be identified, the return of the risk-free proxy is 0

For the client company, we identified a segment as a risk-free proxy that initially seemed rather unappealing a lower return (EBIT) than other customers (2 4% compared with 6 2%, $p <$ 05), without loyalty, and strategically irrelevant Importantly, observe that the customer reward ratio does not determine the absolute desirability of a customer Firms should also consider the impact of the customer on the overall portfolio (i e , customer beta) in addition to other strategic aspects, like growth potential However, for customers with similar impact on the portfolio and no specific strategic consideration, the customer reward ratio provides a clear criterion for choosing the most desirable customer Appendix B provides a summary of the customer reward ratios for key industry sectors

Appendix B shows that most of the industries in the top ten (if ranked using the customer reward ratio) belong to the discretionary category It is noteworthy that customers in lawn and garden, machinery, and office supply categories have the highest levels of reward on risk When the client company executives saw the analysis, they realized that many of the customers that provided the highest reward on risk were not receiving adequate attention Represented here are customers that provide attractive margins but also are characterized by high variability These clients request services when they need them, and to receive the speed and quality of the services that they demand, they are willing to pay a premium price

Data Analysis Conclusion

Using the efficient frontier applied to customer segments, we identify an optimal composition of the customer portfolio that outperformed, in terms of variability, both the client company's current strategy and a profit maximization portfolio, as demonstrated by back- and forward-testing (see Figure 4) By using a diversified, efficient portfolio, companies could reduce the vulnerability and volatility of cash flow from the customer portfolio, better insulating the firm during downturns in the economy without sacrificing performance in the long run We demonstrate how managers can use customer beta and the customer reward ratio to evaluate specific individual customers and to make corresponding adjustments in the customer portfolio

Discussion and Managerial Implications

Marketing managers face increased pressure to demonstrate the financial impact of marketing resource allocation decisions (Rust et al 2004) By demonstrating how financial portfolio theory can be applied to customer portfolio management, our research contributes to marketing theory and practice on several counts First, we extend Srivastava, Shervani, and Fahey's (1998) work by demonstrating conceptually and empirically how the market-based assets of a firm include distinct customer asset classes that are characterized by differing degrees of cash flow variability and vulnerability We test whether customers can be categorized into segments that share similarities with asset classes used in traditional financial investments and find support for our belief that financial portfolio theory is relevant in a customer portfolio context In particular, we show that market segments—defined a priori according to classic market segmentation variables—could be characterized in terms of their risk, in addition to their return, thereby contributing to traditional market segmentation theory

Second, we contribute to research on customer portfolio management (e g , Dhar and Glazer 2003, Johnson and Selnes 2004) by introducing two methods to assess the value of a customer customer beta and the customer reward ratio Responding to the call of Rust et al (2004), our approach embraces (rather than controls for) customer heterogeneity as a path to improved business performance For example, we demonstrate how the customer reward ratio can be used to examine a customer portfolio through a new lens that allows managers to isolate desirable customers that receive high scores on the reward-on-variability measure As we illustrate, the attractive customers that rise to the top on this measure often present a profile that may not be detected when using classical criteria such as average level of purchases

Third, we present an actionable plan to guide marketing managers in creating and managing a diversified portfolio among existing and new customers To this end, we constructed segments according to the variability of standardized revenue We obtained clusters with a high degree of uniformity in terms of level of revenue, size of the business, and industry We combined the clusters to form an efficient frontier that describes the portfolio with the lowest variability of returns for a desired level of return Both back- and forward-testing showed that it is possible to build an efficient customer portfolio We conclude that if companies want to increase the stability of the customer cash flow, risk management techniques can be implemented to ensure diversity among existing and potential customers/segments This study demonstrates that companies can diversify their customer portfolios by developing a thorough understanding of customers' purchase patterns and the drivers of these purchasing patterns (e g , size, preferences for product lines, industry sector)

The Efficient Versus the Profit-Maximizing Customer Portfolio

The goal of building an efficient customer portfolio is different from the profit-maximizing objectives first identified in Blattberg and Deighton's (1996) path-breaking article and extended in subsequent studies (Blattberg, Getz, and Thomas 2001, Reinartz and Kumar 2003, Reinartz, Thomas, and Kumar 2005), which focus on profit maximization in the short and long run There will be some similarities between the efficient and profit-maximizing customer portfolios, but there will also be differences For example, observe in Table 1 that Cluster 5, which dominates the current portfolio and contains some of the most profitable customers, has similar weight in the optimized portfolio (E5)

In contrast, in the efficient portfolio, weights for the other clusters are increased dramatically, especially for Cluster 3, which is dominated by SMBs In other words, SMBs—often not a priority for some businesses—provide a balancing element when it comes to portfolio optimization Cluster 1, which has relatively low profitability and high variability, is the one in which weight has been decreased most drastically for the efficient portfolio compared with the company's current portfolio, from 41% to 4% Considering that Cluster 1 is one in which customers have exhibited the most growth, decisions regarding the customers in this group should be made on a case-by-case basis

Implementing the Portfolio Approach

Compared with corresponding adjustments in a financial portfolio, changes in the composition of a customer portfolio involve higher transaction costs, require a longer time horizon to implement, and can introduce a host of strategic alignment issues to consider Managerial judgment and the strategic goals of the firm ultimately guide the selection of the target portfolio Therefore, the cluster weights that define the efficient customer portfolio provide a tentative portfolio structure that managers can then adjust after examining the full range of customer metrics that CLV-based methods employ Observe from Table 1 that the portfolios along the efficient frontier vary widely in cluster weights For example, the portfolio with the lowest risk (E1) has a balanced composition, whereas the portfolio with the highest return (E10) gives dominant weight (92%) to Cluster 5 Represented in Cluster 5 are large customers, drawn from several industries, which provide higher average revenue and lower variability than other clusters By isolating the risk–return characteristics of these customers, managers can make more informed judgments for targeting customers and estimating future returns

The key difference between customer and financial portfolios is that managers can directly influence outcomes Past studies in the CLV research tradition provide valuable insights into how profitability can be enhanced by selecting the right customers for targeting and determining the level of resources to be allocated to specific customers (e g , Kumar 2008, Bowman and Narayandas 2004) Also, a wealth of other metrics, such as customer loyalty, share of wallet, and strength of the exchange relationship, guides customer management Our approach can be readily incorporated in established customer management frameworks to aid managers in balancing risk and return in a customer portfolio

Limitations and Further Research

Although our approach allows managers to examine the risk–return characteristics of a customer portfolio through a new lens, this study presents some limitations that could spawn further research First, because the current study is confined to a single firm and industry, further research is needed to test the viability of our approach in different industry contexts The data and methods used in this research are available to most companies purchase transactions over time, limited demographics or firmographics, and profitability by cluster Second, the current study centers squarely on the structure of the existing portfolio and therefore does not consider the addition of new market segments Buhl and Heinrich (2008) offer a heuristic method for adding new segments to the customer portfolio, which provides a promising start for further research

Third, the customer portfolio measures used in this study center on the variability of cash flow and profitability but are insensitive to the direction of movement Therefore, managerial judgment, informed by established customer management approaches, is needed to discern the root cause of the variability (i e , growth or decline of cash flow) Further research could explore customer resource allocation from a downside-risk perspective (Harlow 1991) Fourth, we assessed the desirability of customers by analyzing the past volatility of purchases However, for estimating future customer worth, the most appropriate measure would be future volatility To determine the future volatility, Engle (1982) proposes a weighted moving average model that takes into account the long-term behavior of a financial asset By analyzing customer purchase information, a similar model of weighted moving averages could be explored to predict future customer cash flow variability more accurately

Conclusion

In his Nobel Prize acceptance speech, Markowitz (1991, p 496) mentions that "an investor who knows the future returns with certainty will invest in only one security, namely the one with the highest future return " However, as Bernstein (1999, p 1) notes, "Even the most brilliant of mathematical geniuses will never be able to tell us what the future holds In the end what matters is the quality of our decisions in conditions of uncertainty" We propose an approach that customer portfolio managers can follow to cope with uncertain market conditions and to improve the quality of their resource allocation decisions This research offers a new perspective on customer portfolio management, acknowledging an aspect that has been virtually ignored the risk of the customer Paraphrasing Engle's (2003) Nobel Prize acceptance speech, we infer that acknowledging risks should provide insight into which customers are truly worthwhile

Appendix A
Cash Flow Variability by Customer Type

Contractual Relationships

Customer–firm relationships range from formal contractual to transactional relationships Transactional relationships are low involvement, occurring on an as-needed basis Contractual relationships are governed by rules that are mutually agreed on by the contracting parties (Gundlach and Murphy 1993) Due to their explicit nature, contractual relationships are more predictable than transactional ones and typically yield cash flows with less variability Thus, when a high proportion of customers have entered into contractual agreements with the firm, especially long-term contracts, the overall risk of the firm's customer portfolio will be low

We compare the coefficients of variation for customer purchases over time between contractual and noncontractual relationships for the cooperating company in the following way The client company offers four different product lines (similar services, but with different delivery characteristics) Product Line 1 relies on contractual relationships, in which assets are allocated to a specific customer, thus restricting the firm's flexibility to deploy these assets elsewhere All other product lines have greater flexibility and no contracts attached

The coefficient of variation (CoV) for Product Line 1, $\text{CoV}_{\text{Line 1}}$ = 525, is significantly lower (p = 000) than the coefficient of variation for any other product line ($\text{CoV}_{\text{Line2}}$ = 879, $\text{CoV}_{\text{Line3}}$ = 1 216, $\text{CoV}_{\text{Line4}}$ = 1 740, $\text{CoV}_{\text{All Lines}}$ = 708) In other words, the contractual product line (1) has the smoothest, most predictable cash flows, thereby insulating the firm from troughs (downtimes) and peaks (busy times) By serving customers that prefer a contractual relationship, the firm reduces the coefficient of variation for its overall customer portfolio

Size of Business

Research regarding financial portfolios has shown that small firms periodically tend to outperform and underperform large firms, exhibiting a negative correlation in returns (Reinganum 1992) Small firms outperform large firms during economic booms, but the effect disappears during recessions (Kim and Burnie 2002) Large business customers, characterized by financial soundness and greater volume, represent the equivalent of the blue-chip stocks in a financial portfolio (i e , stocks of companies with steady earnings and a solid reputation but slower growth) In contrast, SMBs have high growth potential (Acs and Audretsch 1990) If large firms dominate a financial portfolio, variations in their business cycles will have a substantial impact on their suppliers (LaBahn 1999) Although SMBs usually have less influence on the overall financial portfolio individually, they can be combined to achieve diversification and lower overall variability, provided their revenue streams are not positively correlated (Markowitz 1987)

We compare the coefficients of variation for customer purchases over time between companies of different sizes using a median split based on the number of employees The coefficient of variation for the small companies was 67, statistically different (p = 023) from the value of 77 for large companies

Industry Classification

Industries are affected differently by external economic events For example, a downturn in the economy is often accompanied by a decrease in home construction and an increase in home improvement projects A price increase for a commodity (e g , silicone) might result in a substantial price increase for automobile tires, whereas the price of personal grooming products (e g , shampoos, liquid soaps) might increase very little because silicone is not a relevant component Dhar and Glazer (2003) show that targeting customers in different segments reduces the risk of a revenue decline when economic conditions are changing

We classified customers into major NAICS categories (e g , transportation, paper and packaging, automotive) combined with the S&P global industry classification categories, which are designed to capture sector differences By combining classification schemes, we obtain a finer granularity that allows for more uniformity within the identified categories For example, NAICS identifies retailers, whereas the S&P standard makes the distinction between discretionary (e g Kohl's) and staples (Wal-Mart) retailers, which are likely to respond differently to peaks and troughs in the economy Appendix B presents customer reward ratios, betas, and coefficients of variation for customer purchases over time in different industry sectors

Because there are only a small number of companies in each category (e g , seven customers provide revenue from large discretionary retail companies [line 11 in Appendix B]), there is insufficient statistical power for t-tests of the differences in the average coefficients of variation across categories However, for example, when we compare the office supply segment (line 9), with the food and beverage segment (line 14), we notice important differences Office supply customers are more attractive than the food segment Negative beta signals negative correlation with the overall portfolio, the customer reward ratio is much higher, and the coefficient of variation is much smaller (i e , lower risk) However, the cooperating company has many more customers in the food sector (42) than in the office supply sector (3), and therefore the t-tests were inconclusive

APPENDIX B
Coefficient of Variation Classified Using Both NAICS and S&P

	S&P Categorization	Industry	N	Beta	Reward Ratio	CoV[b]	Average Monthly Revenue (in Thousands of Dollars)	Six-Year Revenue[c] (in Millions of Dollars)
1	Beverage[a]	Food and beverage	14	1 199	1 344	710	369	32
2	Discretionary	Apparel	9	1 261	2 467	802	245	128
3	Discretionary	Automotive	35	1 616	1 400	604	1000	2381
4	Discretionary	Consumer goods	4	883	609	720	599	170
5	Discretionary	Durables	10	1 874	181	656	182	110

APPENDIX B
Continued

	S&P Categorization	Industry	N	Beta	Reward Ratio	CoV[b]	Average Monthly Revenue (in Thousands of Dollars)	Six-Year Revenue[c] (in Millions of Dollars)
6	Discretionary	Electronics and appliances	18	1 533	2 398	786	368	361
7	Discretionary	Home improvement	27	067	1 169	705	313	559
8	Discretionary	Lawn and garden	4	336	8 521	1 145	167	48
9	Discretionary	Office supply	3	–3 668	2 948	461	798	162
10	Discretionary	Paper and packaging	11	1 584	1 976	592	659	311
11	Discretionary	Retail	7	1 125	1 673	675	5042	2476
12	Discretionary	Sporting goods	7	– 233	289	751	123	46
13	Energy	Oil	5	1 067	2 050	680	355	64
14	Food	Food and beverage	42	8 568	774	794	352	973
15	Health	Medical supplies	6	773	111	644	138	55
16	Industrials	Automotive	8	909	1 001	598	237	98
17	Industrials	Electronics and appliances	5	1 856	878	774	152	47
18	Industrials	Machinery	4	107	3 120	567	656	181
19	Industrials	Paper and packaging	9	3 871	315	693	347	223
20	Industrials	Transportation	10	–18 483	557	1 212	243	129
21	Materials	Chemicals	18	834	1 213	668	274	308
22	Materials	Metal manufacturing	12	1 569	1 266	773	87	62
23	Materials	Paper and packaging	30	1 516	850	622	770	1576
24	Materials	Wood manufacturing	4	948	854	474	142	33
25	Staples	Consumer goods	18	–3 780	1 058	792	1763	2048
26	Staples	Paper and packaging	17	742	891	714	1687	2036
27	Staples	Pet supplies	5	16 118	1 789	631	440	88
28	Staples	Retail	5	366	674	629	7544	2683
29	Transportation	Transportation	55	035	2 498	702	244	743

[a] The distinction between food and beverage, though not in the S&P standards, is useful for distinguishing the patterns that are likely to characterize foods (e g , cereals) from those of beverages (e g , beer, soda)

[b] CoV = coefficient of variation

[c] Cumulative revenue for the years 2001–2006

APPENDIX C
Comparisons Between Clusters

Cluster Characteristics	Industry Dominance
Cluster 1 (Constant Growth): *84 customers and 24% of the six-year revenue*	
•Higher beta (more rapid growth) than all other clusters •Higher variability (risk measured using coefficient of variation) than Clusters 2, 3, 5, and 6 •Higher absolute and average revenue per customer than Clusters 3 and 6* •Larger business customers (higher number of employees) than Cluster 2	•89% of the discretionary retailers (and 53% of all discretionary products) •56% of material paper and packaging (and 48% of all materials) •55% of all health products •39% of home improvement
Cluster 2 (Rise and Decline): *74 customers, 12% of the six-year revenue*	
•Lower beta than Clusters 1, 3, 5, and 6 but higher than Cluster 4 •Lower variability (covariance) than Clusters 1 and 4 •Smaller-sized customers (by number of employees) than Cluster 1 but larger than Cluster 3 •Cluster 2 customers buy overall and on average more than the customers in Clusters 3 and 6 but relatively less than the customers in Cluster 5*	•Discretionary electronics and appliances (61%) and discretionary consumer goods (42%) •Manufacturers of metal (47%) and wood (39%) •Food and beverages (35%)
Cluster 3 (Consistency Followed by Decline): *52 customers and 3% of six-year revenue*	
•Lower revenue per customer than Clusters 1, 2, 4,* and 5 but higher than Cluster 6 •Lower variability (CoV) than Clusters 1 and 4 •Smaller-sized customers (by number of employees) than Clusters 2, 4, 5, and 6 •Average level of beta (more explicitly, lower beta than Clusters 1 and 5 but higher beta than Clusters 2 and 4)	•Health (35%, while 55% is in Cluster 1) •Energy (30%, while 66% is in Cluster 5) •Machinery (15%, while 80% is in Cluster 5)

APPENDIX C
Continued

Cluster Characteristics	Industry Dominance
Cluster 4 (Constant Decline): *71 customers and 9% of the six-year revenue* •Lower average revenue and overall revenue than Cluster 5 but higher overall revenue than Clusters 3* and 6 •Higher variability (CoV) than Clusters 2 and 3 but lower than Clusters 5 and 6 •The lowest beta among all clusters in terms of revenue but highest beta among all clusters in terms of return	•Industrial electronics (60%) •Discretionary automotives (51%) •Durables (45%) •Beverages (47%)
Cluster 5 (Best Customers Slowing Down): *61 customers and 47% of six-year revenue* •Higher average revenue and overall revenue than Clusters 2,* 3, 4, and 6 •Lower variability (CoV) than Clusters 1, 4, and 6* •Lower beta than Cluster 1 but higher beta than Clusters 2, 3, 4, and 6 •Larger-sized customers than Cluster 3 (by number of employees) and Cluster 6* (by annual sales)	•Staples in general (77%) •Automotive—staples (74%) •Paper and packaging—staples (92%) •Consumer goods—staples (86%) •Energy (66%) •Industrials (43%) •Chemicals (industrial and materials: 36%) •Machinery (80%) •Lawn and garden (45%)
Cluster 6 (Low-Revenue Customers): *125 customers and 5% of the six-year revenue* •Lower revenue per customer than any other cluster •Lower variability (CoV) than Clusters 1 and 4 but higher than Cluster 5* •Lower beta than Clusters 1 and 5 but higher beta than Clusters 2 and 4 in terms of revenue, but lowest beta among all clusters in terms of return •Larger company sizes (based on the number of employees) than Cluster 3 but smaller customer business size (based on annual sales) than Cluster 5* •Customers in this cluster buy significantly less than the average customer (more than 25% of customers account for 5% of the six-year revenue) and do not have the absolute majority for any of the categories	•This cluster has (statistically) as large of a percentage of the transportation industry as Cluster 5 (about 23%), and the second-highest revenue from the lawn and garden industry (32%, while 45% is in Cluster 5)

*The difference is significant at the 90% confidence level. All other comparisons are statistically significant at the 95% confidence level or higher.
Notes: CoV = coefficient of variation.

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Commentaries and Rejoinder to "Balancing Risk and Return in a Customer Portfolio"

A Comment on "Balancing Risk and Return in a Customer Portfolio"

Fred Selnes

Tarasi et al 's (2011) article titled "Balancing Risk and Return in a Customer Portfolio" makes a noteworthy contribution to customer portfolio management theory, an important subject that has yet to receive a great deal of research attention This brief comment emphasizes a few issues regarding the application of modern financial portfolio theory to customer portfolio management The reason for developing financial portfolio theory was to help financial investors make decisions regarding their securities market portfolios As Devinney, Stewart, and Shocker (1985) argue in their comments on Cardozo and Smith's (1983) work, applying financial portfolio theory to a marketing context requires substantive modifications to the theory because this context does not meet some of the critical assumptions in financial portfolio theory In accordance with that perspective, I highlight some key issues with Tarasi et al 's approach (2011) that require attention for the work to be truly useful

Critical Assumptions in Modern Financial Portfolio Theory

The essence of financial portfolio theory relates to reducing risk by diversifying investments It is well known that simple diversification with different types of customers serves to reduce overall customer portfolio risk, the marketing field has also widely applied this logic For example, companies tend to reduce their dependence on a single (large) customer to avoid "putting all their eggs in one basket" However, the point of modern financial portfolio theory is to move beyond simple diversification and reduce overall risk by constructing a portfolio of assets that have low correlation of returns Assets A and B have a low correlation of returns if the return of A is high when the return of B is low, and vice versa

Markowitz (1952) proves mathematically that the variance of returns in a portfolio of securities depends on the correlation of returns among the securities in the portfolio It is possible to express the variance of a portfolio p with two assets as follows

$$(1) \qquad \sigma_p = x_A^2\sigma_A^2 + x_B^2\sigma_B^2 + 2x_Ax_B\rho_{AB}\sigma_A\sigma_B,$$

where x_A and x_B are the relative shares in assets A and B, σ_A^2 and σ_B^2 are the variances of return in assets A and B, and ρAB is the correlation of return from assets A and B As Equation 1 shows, variance of the portfolio decreases when the size of the correlation between return from asset A and asset B is lower Because the expected value of the investment in a portfolio increases with reduced portfolio variance, investors diversify their portfolios by minimizing Equation 1—in other words, by minimizing the risk of their portfolio

Possible portfolios can be plotted in a diagram with the expected return on one axis and the risk on a second axis The definition of the efficient frontier is portfolios that have (1) greater expected return than any other portfolio in their risk class (i e , any other portfolio with the same variability of returns) and (2) less risk than any other portfolio with the same level of expected return A financial investor can improve the value of a portfolio by changing the relative share of the various assets in the portfolio either to reduce risk at a given level of expected return or to increase the expected return at a given level of risk

As Tarasi et al suggest, it is possible to apply the approach to a customer portfolio context in which the efficient frontier of customer portfolios is the set of portfolios with the lowest risk at a given level of return or the highest expected return at a given level of risk A marketing manager can optimize the value of a customer portfolio by reducing the number of customers of a certain type and increasing the number of customers of another type such that no other combinations of customer types provide a better expected return at a given level of risk or lower risk at a given level of return The validity of this theory, when applied in a marketing context, rests on several important assumptions

One of Tarasi et al 's assumptions is that customer portfolio value has the same meaning for the marketing manager as financial portfolio value has for the financial investor In reference to Srivastava, Shervani, and Fahey (1998), Tarasi et al argue that it is possible to conceptualize customers as financial assets, which assumes the option of applying the value concept in financial theory to marketing and customer portfolio value Although this is a legitimate argument, marketing managers tend to take a broader view of customer portfolio value than they do with financial assets For example, Blattberg and Deighton (1996) suggest that the value of a customer portfolio is a consequence of the level of the retention costs needed to develop committed

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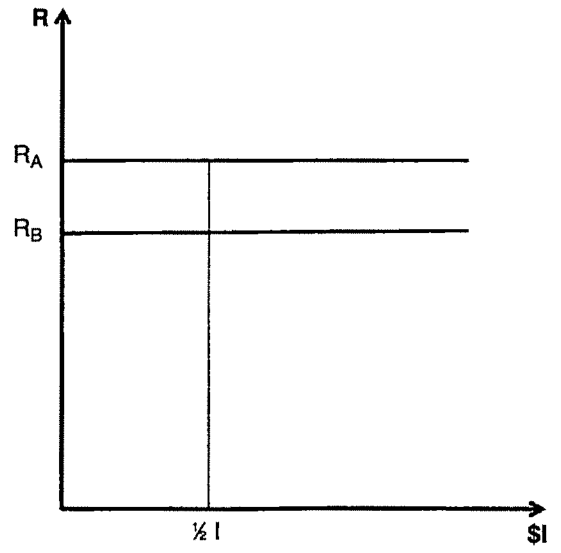
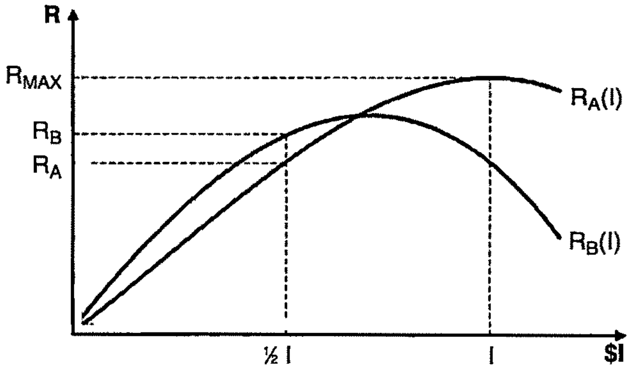
ISSN 0022-2429 (print), 1547-7185 (electronic)

FIGURE 1
Investment–Return Relationships

A Investment–Return Relationship for a Portfolio of Assets with a Linear Return Rate



B. Investment–Return Relationship for a Portfolio of Assets with a Concave Return Rate



Source Devinney, Stewart, and Shocker (1985)

and loyal customers, rather than simply a consequence of the level of acquisition costs Johnson and Selnes (2004) argue that there is a connection between the value of a customer portfolio and how it improves the companies' production functions (i e , economies of scale and economies of scope) Others have argued that the value of a customer portfolio depends on how well it is connected to other marketing assets, such as the companies' brand portfolios (Rust et al 2004) Customers can also be valuable because they drive market orientation and innovation (Selnes and Sallis 2003) Accordingly, the maximum value from a marketing perspective, and therefore the composition of a customer portfolio, is not always equivalent to the maximum value derived from a financial investor perspective For example, if two segments with equal return ratios differ in terms of the variability of return (and therefore risk), the financial investor perspective states that the company should increase its share in the low-variability segment and reduce its share in the high-variability segment However, the segment with the higher return variability may have stronger effects on positive word of mouth, brand building, or relationship learning Consequently, the high-variability segment may have a nonfinancial advantage that makes it more valuable from a marketing management perspective Thus, applying the efficient frontier rule to a customer portfolio has the potential to lead to suboptimal solutions

A second important assumption in financial portfolio theory is that return increases linearly with the invested amount As Devinney, Stewart, and Shocker (1985) note, marketing investments are more likely to follow a concave than linear shape, thus achieving a maximum at some specific level of investment Figure 1, Panel A, illustrates a linear relationship between investment and return, and Figure 1, Panel B, shows a concave relationship between investment and return With a linear relationship, reallocating the share invested in asset A to asset B does not affect the level of return on either asset With a concave relationship, reallocating the share invested in asset A to asset B affects the level of return for both assets The example in Figure 1, Panel B, shows that the rate of return from the investment reaches its maximum when the investor allocates all resources to asset B The consequence is that, instead of customer segments' investment positions being fixed in a return–risk space, they depend on the amount invested in each customer segment Therefore, reallocating the fraction invested in different customer segments within the portfolio changes the expected return and risk from each individual customer segment Accordingly, even if the financial portfolio analysis indicates that the optimal solution is to reduce the relative amount invested in customer segment A and increase the relative amount invested in customer segment B, this may not be true, because changing the level of investment in these customer segments would change the expected return and risk, which would mean that the portfolio is no longer efficient Although Tarasi et al address this concern, the consequence of not meeting this assumption might be more serious and could challenge the validity of an efficient frontier in a customer portfolio For example, employing the efficient frontier approach might lead managers to split their investments into two customer segments, whereas the actual maximum of expected return would be to allocate all the resources in one of the customer segments, as exemplified in Figure 1, Panel B

Conceptualizations and Operationalizations of Return and Risk

Financial portfolio theory defines the return for an asset as follows

(2) $$r = [(p_1 - p_0) + d_1]/p_0,$$

where p_0 is the price for the asset at the beginning of a certain period, d_1 is the dividend the investor receives in the period, p_1 is the price at the end of the period, and r is rate of return for that period In a marketing context, it is possible to conceptualize return as the accumulated earnings that an investor derives from a customer segment divided by the accumulated investments in the customer segment The investment analogy is the allocation of marketing resources to the various customer segments

Tarasi et al conceptualize return as profit margin or net earnings and use earnings before interest and taxes per customer segment divided by the total revenue per customer segment as the measure of return This variable is different than earnings relative to investments, which financial portfolio theory uses Customer segments with the highest return (on investment) do not necessarily have the highest profit margin, just as customer segments with the lowest return do not necessarily have the lowest profit margin The problem is that there is not a perfect correlation between profit margin and return on investment, therefore, the chosen operationalization violates the assumptions of financial portfolio theory Tarasi et al do not explain the correlation between net earnings and return in their portfolio However, it is reasonable to expect that the segment with larger customers (Cluster 1) will have a higher return rate, even though the profit margin is below average, because the marketing investments necessary to get one incremental dollar sales from larger customers is often relatively smaller than the marketing investment needed to get one incremental dollar sales from smaller customers Furthermore, to obtain incremental revenues from a larger customer segment, a marketing manager might be willing to accept a lower price and, therefore, a lower level of net earnings However, despite a lower level of profit margin, the relative difference in investments might mean that the return on investment from the larger customer segment is actually higher than the return from the smaller customer segment If this is the case, the inference of the efficient frontier is incorrect, and the company should not reduce its share in Cluster 1, as Table 1 in Tarasi et al 's article suggests

The risk of a financial portfolio is the variability of its return under the assumption that a stationary distribution generates the return Tarasi et al conceptualize risk as variability in cash flow (operationalized as sales revenues) In other words, customer segments with higher variability in sales revenues over time are considered more risky This implies that a customer segment that systematically purchases one unit in one month and three units in the next month will have higher revenue variability and, therefore, a higher level of risk than one that purchases two units every month In addition, a customer segment that increases its purchases every period will have higher variability, and therefore risk, than one with stable purchases over time Consequently, the classification of a growth segment is more risky even if its revenue increase is stable and predictable The implication of the analysis is that the efficient portfolio will have less variance in revenues and will therefore consist of customer segments with more stable revenues Because it is easy to manage variability in revenues from a customer segment as long as it is systematic and predictable, variability in revenue is not likely to be a valid measure of risk Thus, the derived efficient portfolio frontier has the potential to be misleading and even detrimental to profitability

Concluding Remarks and Further Research

Although questions can be raised about the validity of Tarasi et al 's approach, the authors nonetheless make an important contribution Their decision to select customer segments rather than individual customers as the unit of analysis is significant Marketing managers allocate resources and specialize in both customer segments (e g , product development, brand building, customer relationship management systems) and individual customers (e g , sales, market communication, promotions), the joint effect determines the return of the investments

I also believe that the analysis of purchase patterns is important and is a promising avenue for further research Constructing the portfolio of customer segments with the right mix of purchase patterns probably has a close relation to value creation Anecdotal evidence from business practice suggests that companies that can combine customer segments with complementary purchase patterns have greater fixed capacity utilization For example, it is well known that a resort hotel can improve its room utilization by combining business convention customers with consumer holiday customers Furthermore, complementary purchase patterns might be even more important than negative covariance of returns (on which financial portfolio theory relies)

Customer portfolio theory can be further advanced by employing mathematical modeling and statistical tools (as financial portfolio theory has done) However, I believe customer portfolio theory would be advanced to a greater degree by incorporating customer purchase behaviors and marketing managers' multifaceted objectives, rather than employing more sophisticated financial portfolio theory instruments I commend Tarasi et al for their contribution and hope it inspires scholars to develop the area further

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"Balancing Risk and Return in a Customer Portfolio": A Comment

Matthew T. Billett

Research on the interface of marketing and finance continues to be a source of important new insights in both the marketing and finance literature streams. Tarasi et al. (2011, hereinafter TBHW) contribute to this research stream a novel application of modern portfolio theory (MPT), widely used in finance to optimize financial portfolios, to a firm's customer portfolio. Applying MPT to a financial portfolio amounts to trading off the expected return (mean) of a particular asset class against the influence that asset class will have on overall portfolio risk (variance). The authors apply the mean-variance optimization that underpins MPT by replacing financial asset classes (e.g., stocks, bonds, real estate, commodities) with customer asset classes (e.g., segmented by customer industry). Although this application provides new insights for marketing, as researchers, it is crucial to assess their findings in light of the assumptions and limitations underlying the MPT methodology.

Modern portfolio theory makes numerous assumptions, and its empirical application in finance commonly raises necessary caveats and concerns among finance researchers. These assumptions and concerns garner much attention in the finance literature, which has identified conditions and circumstances in which MPT is more or less useful. Although TBHW consider these issues throughout their article, the primary purpose of this comment is to flesh out in more detail some of the common issues and concerns with MPT among finance researchers, with the aim of facilitating a dialogue on the usefulness of MPT in the customer portfolio setting and potentially other related market-based asset settings. I divide the comment into two sections: one on the underlying reason investors value MPT and the other on the practical implementation issues of using MPT. In each section, I summarize some of the findings in the finance literature and then turn to the application of MPT to market-based assets to raise potential questions and avenues for further research.

The Value Proposition of MPT

When MPT is applied to financial portfolios, it shows that investors can diversify some types of risk away at little or no cost. Risk-averse investors create portfolios of financial assets and judge each investment according to the investment's covariance with other assets rather than the total risk (variance) of that investment alone. Modern portfolio theory analysis determines what these portfolios should look like and indicates the set of efficient portfolios that dominate inefficient allocations.[1] Given the relatively low transaction costs of creating efficient portfolios through mutual funds, exchange-traded funds, and so on, investing in efficient portfolios is economically feasible for most investors.

Although the concept of efficient portfolios is important for investors, it is equally important in shaping decision making in firms and determining value-maximizing capital budgeting practices. If investors own efficient portfolios, they do not benefit from corporate decisions that eliminate risks the investors have already diversified away. For example, this investor view of risk has been used to illustrate why conglomerate mergers can be value destructive. Levy and Sarnat (1970) show that although merging two firms might reduce cash flow variability, investors can more efficiently accomplish this themselves by owning shares of both companies. Unless the merger creates synergistic gains, investors will view the cost of the merger as outweighing the benefits. Put simply, investors will not value the decrease in firm risk because it was already present in their efficient portfolios. The finance literature makes this point prominently, not only on mergers and acquisitions but also on risk management and corporate finance decision making. From this perspective, simply eliminating unsystematic risk does not benefit investors, unless it also contemporaneously increases mean returns.

The marketing equivalent question then becomes, What exactly are the cost–benefit trade-offs for a firm regarding its customer portfolio? Research aimed at understanding how investors value more efficient customer portfolios is merited; if more efficient portfolios simply reduce unsystematic risk—like conglomerate mergers of the 1960s—the benefits may not outweigh the costs.

Moreover, much research in finance suggests ways in which reducing unsystematic risk can also benefit investors (by improving expected returns). For example, if a firm has significant financial distress costs, reducing the likelihood of becoming distressed can improve firm value (see Stulz 1999).[2] However, this link connecting total risk and firm value is by no means universal to all firms. Moreover, the degree to which the total risk matters varies from firm to firm and spans situations in which unsystematic risk is irrelevant to highly relevant.[3] Additional research focusing on how

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[1] Efficient portfolios are defined as having the highest expected return feasible for the given level of the portfolio's risk; alternatively, they have the lowest risk for a given expected return.

[2] Some of the channels Stulz (1999) points out include links between total risk and financial distress costs, underinvestment problems, and asymmetric information, which make unsystematic risk value relevant.

[3] This amounts to each firm having a unique "risk premium" based on its own situation.

market-based assets (e.g., customers) influence firm value and how that value link varies with firm or industry characteristics would be useful.[4]

In addition to more research on the benefits of applying MPT to market-based assets, a better understanding of the costs would also be helpful. What are the transaction (and other) costs associated with shifting toward an efficient portfolio? In finance, researchers have focused on transaction costs. Although for many financial assets (e.g., shares of stocks, mutual funds) transaction costs are relatively small, this is not necessarily true for all financial assets. For example, hedge funds, private equity, and venture capital are available to only the wealthiest of investors. This means that efficient portfolios might be much different from one investor to another according to the investor's cost of accessing those asset classes. Similarly, customer segments may exhibit dramatically different transaction and access costs to different firms. It would be useful to understand which customer segments can be cheaply "bought" and "sold" versus those that might have large associated transaction costs. Without such knowledge and the ability to calibrate such transaction costs, meaningful implementation of MPT becomes tenuous.

Issues in the Practical Application of MPT

A primary benefit of MPT is that it can be implemented. Practitioners have widely adopted MPT to guide investors toward better decision making. However, MPT implementation raises numerous concerns as to its practical value. Efficient portfolios are highly sensitive to the assets' expected returns and covariances between asset classes, which are difficult to estimate. Britten-Jones (2002) finds the sampling error in the estimates of portfolio weights is large, even though there is a relatively long time series of returns available for financial securities. As TBHW discuss, DeMiguel, Garlappi, and Uppal (2007) also question the usefulness of MPT. They compare the performance of 14 portfolio allocation models, including several designed to address estimation errors, with the performance of a simple naive portfolio strategy that gives equal weight (1/N) to each asset in the portfolio. They find that none of the 14 alternative portfolio strategies consistently outperforms the naive portfolio. This suggests the effect of estimation error on portfolio weights is large, and even strategies designed to address estimation risk are only moderately successful.

Thus, what do these findings caution when deploying MPT to optimize customer portfolios? The major concern the finance literature suggests is this: How precise are the mean and covariance return estimates in the customer data? Additional research on the persistence of spending patterns by customer segment would help speak to this issue. As the finance literature indicates, the historical correlations gleaned from decades of data failed to hold true during the recent financial crisis, when correlations between most risky assets converged toward 1. If customer expected returns and covariance estimates are subject to significant error, the weights obtained from MPT might not be useful and could potentially be harmful.

Another concern in the finance literature is whether prices accurately reflect expected returns. If a stock is mispriced, realized outcomes will deviate according to the mispricing of the underlying assets. In financial markets, arbitrage can lead prices of individual assets to reflect the efficient risk–return characteristics, and deviations from this efficient price are quickly arbitraged so that the price returns to its efficient level. The key point for MPT is that investors expect the same risk–return trade-off regardless of the amount they purchase (e.g., they can have a weight of 10% in a security or 30% on the same security). However, this assumption may not always be true; arbitrage typically requires the existence of reasonable substitutes. Wurgler and Zhuravskaya (2002) show that for many stocks that lack close substitutes, arbitrage is costly, and therefore these stocks exhibit greater mispricing. If securities are mispriced, then the underlying fundamental risk–return relationship assumed in the MPT analysis will not be reflected in the prices or realized in the portfolio that purchases them.

In a market-based asset context, the relevant question is whether the fundamental risk–return relationship for customers is independent of quantity. For example, assume 10% of a firm's customers are from a particular segment and its managers expect to earn 9% on those customers (and that these returns have a particular covariance with the other customer segments). Is it reasonable to assume that they will earn the same 9% if they tripled their share of customers from that segment to 30% of their overall customer portfolio? If so, the risk–return profile of a customer segment will be the same regardless of whether the weight is 10% or 30%. However, if the costs of obtaining the additional customers and/or the revenues expected from these additional customers are not identical to the existing customer, the MPT assumption that the underlying risk–return is independent of the weight is violated. The size of customer portfolios might also influence the stability of the risk–return relationship for particular customer segments. It is typically assumed in financial portfolios that a $1 million portfolio and a $50 million portfolio will have the same expected returns and risk profile if they have the same weights on asset classes. In this sense, financial assets are scalable. If customer portfolios are not scalable, meaningful implementation of MPT might be challenging. There might be ways of identifying customer segments that are scalable and those that are not. This would allow for constraints to be put on the weights for particular customer segments and improve MPT's usefulness.

There are additional differences between financial portfolios and customer portfolios that could influence how MPT might be implemented. It seems likely in practice that the finite supply of customers in a given segment would limit the feasibility of some weighting schemes. Perhaps some segments have unrestricted weights (i.e., many customers with similar risk–return profiles), while others do

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[4] This issue needs to be in the forefront of decision makers' minds. Absent MPT, the decision maker would presumably pursue the most profitable (highest mean) customers first. Switching to an MPT view of customers indicates that a smaller mean return from a customer may be warranted if their spending patterns are relatively less correlated with the other customers of the firm. The commensurate reduction in the risk profile of the customer portfolio must be traded off against the lower mean.

not Financial assets are almost infinitely divisible, allowing investors to choose precise weights (e g , 20% or 21% stocks) This also speaks to the question of whether having one large customer in a given segment has the same risk–return profile as having many small customers in that segment These sorts of issues might be tantamount to putting constraints on the weights of some customer segments Further research could explore the factors that lead to constraints on feasible portfolio weights for various customer segments and how constrained optimization could lead to improved weighting schemes The constraints could depend on things such as the loyalty and satisfaction of potential customers currently served by competitors, which would affect the costs of attracting them

It is also worthwhile to examine how managers might implement customer portfolio optimization on the basis of the findings of an MPT analysis According to TBHW's Table 1, the optimal portfolios' customer makeups are different from one another and would cause the firm to change its customer makeup dramatically For example, the firm's current customer makeup has 36% coming from segment X_1 In all the efficient portfolios, that customer segment is reduced to anywhere from 20% to 0%, with offsetting rises in other customer segments Such shifts likely involve significant costs, and these deserve considerable attention Moreover, the increased profitability of moving to the efficient portfolios is negligible relative to the risk reduction, again emphasizing the need to understand how this risk reduction is valuable to the firm's investors/owners

Conclusion

In summary, TBHW do a thorough job applying MPT to a firm's customer portfolio The insights and implications they generate have the potential to dramatically change the way managers view and manage market-based assets, such as customers They are also careful to point out the potential pitfalls of MPT in this setting The finance literature has wrestled with many of the theoretical and implementation underpinnings of MPT in the context of financial assets The insights gleaned in finance research with regard to these issues should be useful in formulating the next steps for research into applications of MPT to market-based assets

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"Balancing Risk and Return in a Customer Portfolio": A Reply

Crina O. Tarasi, Ruth N. Bolton, Michael D. Hutt, & Beth A. Walker

A financial portfolio perspective presents important implications for the way in which market segmentation and customer portfolio management are conceptualized, practiced, and taught We begin by addressing each of the issues Selnes (2011) and Billett (2011) identify Then, we describe the market context in which we believe the approach can be effectively applied and the way managers at the sponsor firm implemented our study's findings

Comments by Selnes (2011)

Selnes (2011) provides a careful assessment of the article and centers on two assumptions from financial portfolio theory that might not extend to customer portfolio management First, he argues that marketing managers take a broader view of customer portfolio value than an individual investor does with financial assets In support of this position, he suggests that the value of a customer portfolio is related to the retention costs needed to develop loyal customers or how the customer portfolio improves the firm's production function (e g , economies of scale) We concur that there are many ways to value customers and market segments on dimensions such as brand-building appeal, word-of-mouth influence, and relational learning, which are beyond the scope of our study Our work is consistent with the customer lifetime value research stream, which has advanced knowledge involving customer value measurement (e g , Blattberg and Deighton 1996, Kumar 2008) However, the goal of our work is to take a step toward advancing this research tradition by incorporating the risk characteristics of customers and testing these ideas in a field context

Second, Selnes argues that an important assumption in financial portfolio theory is that return increases linearly with the invested amount Indeed, as we discuss and acknowledge in the article, a distinct difference between a customer portfolio and a financial portfolio is that the returns from investing in customers are likely to be nonlinear Specifically, the amount of investment has a nonlinear relationship with the "return on customer," which means, for example, that small investments might be insufficient to attract or retain an individual customer or market segment Similarly, after a certain level of investment in an individual customer or market segment, additional incremental expenditures might not improve returns Selnes argues that the nonlinear returns from customer segments may challenge the validity of an efficient frontier in a customer portfolio. As we note in the article, the optimal portfolio can best be viewed as an ideal customer base that managers can evaluate, revise, and assemble over time. Therefore, the optimization process should include a qualitative overlay based on managerial judgment to arrive at recommended resource allocation by segment. The spirit of our article fits the adage attributed to John Maynard Keynes (1883–1946): "It is better to be roughly right than to be precisely wrong." Thus, further research might investigate how to identify the optimal investment in an individual customer or market segment to optimize the customer portfolio.

Regarding the conceptualization and operationalization of return and risk, Selnes raises three points. First, he correctly observes that the earnings relative to investments are different from returns received from customers. In financial terms, the focus is on return on investment, in which the investment is the price paid for the asset. In marketing, the price of a customer asset includes multiple facets: the acquisition costs, the cost to serve, and the retention cost. In our study, we center on managing the variability of revenue while maximizing the return on that revenue and show that it is possible to minimize the variability of revenue for a certain level of return. Although measuring the return on customer investment as Selnes suggests would add more depth to our analysis, it imposes data requirements that few studies in marketing have met. We felt fortunate indeed to secure access to seven years of revenue and profit data by customer for a business-to-business firm's entire customer base.

Second, Selnes posits that the segment with large customers (Cluster 1 in our study) will have a higher return rate even though the profit margin is below average: "However, despite a lower level of profit margin, the relative difference in investments might mean that the return on investment from the larger customer segment is actually higher than the return from the smaller customer segment. If this is the case, the inference of the efficient frontier is incorrect, and the company should not reduce its share in Cluster 1." However, because some of these customers are characterized by a high cost to serve, they may well provide a low return on investment. Kaplan and Narayanan (2001) argue that large customers tend to be either the most profitable or the least profitable in the entire customer base. This was true in our study.

Third, Selnes questions the conceptualization of risk as variability in cash flow (operationalized as sales revenues). As we acknowledge in the "Limitations and Further Research" section, the customer portfolio measures used in our study center on the variability of cash flow and profitability but are insensitive to the direction of movement. Therefore, managerial judgment, informed by established customer management approaches, is needed to discern the root cause of the variability (i.e., growth or decline of cash flow). Further research might explore customer resource allocation from a downside-risk perspective.

Comments by Billett (2011)

Billett contributes perspectives from the finance literature to the dialogue related to our article. Regarding the value proposition of modern portfolio theory (MPT), he raises two key points. First, we concur with his position that research is needed to better understand how investors value more efficient customer portfolios. The literature on market-based assets suggests that low vulnerability and volatility reduce the risk associated with cash flows, which results in a lower cost of capital and higher shareholder value (Rao and Bharadwaj 2008; Srivastava, Shervani, and Fahey 1998). Further research might determine whether firms with more efficient portfolios are more accurate in providing earnings guidance to the investment community or are rewarded by investors who display more confidence in the earnings projections from firms with more efficient portfolios.

Second, Billett highlights the importance of carefully determining the transaction and access costs associated with a shift toward an efficient portfolio. He notes that some customer segments can be more readily entered or expanded than others when the associated transaction costs are considered. As we detail in the article, we concur and assert that customer portfolio adjustments ultimately hinge on managerial judgment and represent an important strategic decision. Reorganizing the customer portfolio may require a realignment of the sales force and a different marketing communications strategy, highlighting the higher transaction costs associated with customer versus financial portfolios.

Billett also details four issues related to the practical application of MPT. First, he observes that the historical correlations gleaned from decades of data failed to hold during the recent financial crisis, when the correlation between most risky asset classes converged toward 1. Likewise, we cautioned that during periods of severe economic stress, market segments that were previously uncorrelated can suddenly move in tandem, limiting the benefits of diversification. Although stock prices are more vulnerable to violent swings than customer purchases, we agree that further research is needed to examine the persistence of customer segments' spending patterns. We acknowledge that the weights obtained from MPT may not be useful if customer expected returns and covariance estimates are subject to significant error.

Second, he questions whether the fundamental risk–return relationship for customers is independent of the proportion of customers served (e.g., 10% versus 30% within a segment). As we discuss in the article and our response to Selnes, when an investor selects an optimal weight for a particular asset class and makes the associated purchase, there is no impact for the risk and return for that asset class. In contrast, managers can exert a significant degree of control over the risk–return characteristics of the customer portfolio. Because of increasing or decreasing returns to scale, the weight assigned to a market segment may affect the performance of that segment within the customer portfolio. We endorse his call for further research that explores methods for identifying customer segments that are scalable and those that are not.

Third, Billett observes that investors can choose precise portfolio weights, but the finite supply of customers in a given segment might limit the feasibility of some weighting schemes in the customer portfolio. We agree that a promising line of further research could explore the factors that lead to constraints on feasible portfolio weights for various customer segments and how constrained optimization might lead to more refined weighting schemes

Fourth, Billett wonders how managers might implement customer portfolio optimization on the basis of the findings of an MPT analysis He suggests that the increased profitability of moving to efficient portfolios is negligible relative to the risk reduction However, importantly, the results reveal that the firm's efficient portfolio has constantly lower variability than the firm's existing portfolio and the profit maximization portfolio, furthermore, the profit performance is superior in the long run Moreover, from our discussions with managers at the sponsor firm and at a Marketing Science Institute conference on effective marketing spending, we find that practitioners embrace the idea of taking a fresh look at the structure of the overall customer base and identifying a combination of customers that stabilizes cash flow and advances profit performance We address issues Billett identifies related to the implementation of our portfolio approach further in the next section

Implementing the Customer Portfolio Approach

Appropriate market contexts Our approach especially applies to situations in which there are meaningful differences in variability across the market segments that constitute a firm's customer portfolio Therefore, we expect that the portfolio approach will have immediate application for business-to-business firms that serve diverse sectors of the economy Such firms tend to allocate a greater portion of their sales and marketing resources at the level of individual customers, have direct contact with customers, and can more readily access customer purchase histories In contrast, the approach is less suitable and more difficult to implement for consumer packaged goods firms, which rely on a host of channel partners to reach diverse customer segments The approach may be suitable in those business-to-consumer industries in which a firm has direct contact with its customers, such as online retailing, telecommunications, and financial services However, we want to reiterate that the portfolio approach will be less appropriate and of limited managerial value in these or other contexts if market segments tend to be highly correlated

Customer portfolio adjustments Through managerial control and specific knowledge (Devinney and Stewart 1988), marketing managers, particularly in the long run, can exercise a significant degree of control over the risk–return properties of the customer portfolio Therefore, the optimal or efficient portfolio that is identified by the analysis represents an ideal customer base that managers can scrutinize, revise, and assemble over time As we acknowledge in the article, some portfolio adjustments can be implemented by resetting the customer contact priorities of the sales force However, others might require a more fundamental realignment of sales and marketing communication strategies

To apply the approach, a marketing manager might first explore the array of portfolio options along the efficient frontier and examine the cluster weights (customer representation) in each portfolio For example, some of the options include portfolio weights that more closely approximate the composition of the current portfolio than others Next, using the current portfolio as a benchmark, the manager can evaluate the strategic actions that might be taken to achieve a target portfolio along the efficient frontier

This is the process that managers followed at the firm we studied—they examined the composition of the current portfolio and considered incremental portfolio adjustments that would move the customer mix toward the efficient frontier To support customer selection, the managers drew on cost to serve and profit data by individual customer and industry sector Moreover, to inform decision making, the managers also used a top-down macro forecast for the economy and selected industries provided by a forecasting unit within the firm

Applying customer risk metrics To identify a target portfolio, managers at the cooperating firm first examined the customer betas and reward ratios for each of the 29 industries that the firm serves Provided here is a preliminary view of the relative attractiveness of customer groups on the basis of betas (correlation to the overall portfolio) and reward on variability Next, they wanted to examine the customers with the highest customer reward ratios (i e , the top ten) in each of six clusters defined in the study as well as those for each major product line

In evaluating particular customers, managers also (1) examined customer ratings (e g , relationship strength, potential) provided by the sales management function and (2) used the customer risk measures as an overlay in the assessment To move toward the efficient portfolio, the firm placed a special priority on increasing the proportion of small and medium-sized customers in the portfolio and redirected sales resources to increase sales call contacts on carefully chosen accounts in the small and medium-sized business sector Likewise, managers used the customer reward ratio as a further guide for gauging the relative attractiveness of key customer accounts, particularly those involving a contractual relationship, for which a significant level of dedicated assets are deployed

A Concluding Note

Our study answers the call of Gupta et al (2006, p 150) for research to guide marketing managers in taking "actions that maximize the value of the portfolio rather than the value of the next-acquired customer" Customer lifetime value provides a valuable framework for advancing firm performance by identifying the right customers and allocating resources accordingly, whereas our approach seeks to increase firm value by identifying the right customer mix or portfolio for the firm Our study raises implications for research in the areas of (1) marketing strategy development (e g , diversified vs focused strategies), (2) market segmentation, and (3) customer relationship management Further research is needed to develop approaches that more fully integrate customer risk into customer lifetime value models We hope that our study, along with the incisive commentaries that Selnes and Billett provide, help spawn such research efforts

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Ekaterina V. Karniouchina, Can Uslay, & Grigori Erenburg

Do Marketing Media Have Life Cycles? The Case of Product Placement in Movies

This article examines the economic worth of product placement in movies over a time span of 40 years (1968–2007) The authors find an inverted U-shaped relationship between the year of the movie release and the returns associated with product placements In addition, a similar inverted U-shaped relationship characterizes the economic worth of tie-in campaigns associated with product placements These findings are consistent with the habituation–tedium theory used to explain the inverted U-shaped pattern in response to novel advertisements and suggest that the same mechanism could be influencing the response to an entire marketing medium Overall, the results reinforce the notion that marketers find it increasingly difficult to get their message across using traditional media and underscore the need for the marketing industry to reinvent itself when new tactics lose their luster The authors conclude with a discussion of additional empirical regularities

Keywords product placement, marketing media life cycles, movies, habituation–tedium theory, event study, cumulative abnormal returns, hierarchical linear modeling

For better (e g , the Nokia 7110 in *The Matrix* [1999]) or worse (e g , more than four dozen brands in *The Departed* [2006]), product placement in the movies has become a part of the contemporary marketing arsenal, lending its power to offerings ranging from pregnancy tests to luxury cars (Grover 2009) Gupta and Gould (1997, p 37) define product placement as a marketing strategy that "involves incorporating brands in movies in return for money or for some promotional or other consideration" Industry sources boast that it can do wonders and significantly boost sales of featured brands For example, Ray-Ban considered the lifespan of its Wayfarer model sunglasses to be almost over when it placed them in *Risky Business* (1983) Before the release of the movie, the declining sales were at approximately 18,000 units a year, following the movie release, the annual sales of the revived product jumped to 360,000 units By 1989, following a number of successive placements (e g , *Top Gun* [1986]), sales reached 4 million units (Sengrave 2004) Despite the abundance of such success stories, the evidence for the tangible benefits of product placement is mostly anecdotal, and studies that empirically demonstrate its economic worth are scant at best Nevertheless, firms can take extreme measures to establish strategic dominance in branded entertainment At the peak of the "cola wars" in the early 1980s, Coca-Cola went as far as purchasing Columbia Pictures to control the entertainment arena (Sengrave 2004)

Product placement originally fell under the umbrella of covert marketing because viewers were often unaware of the commercial persuasion effort Many early marketing research efforts concentrated on the subliminal and covert nature of this marketing medium (Nebenzahl and Secunda 1993) However, as consumers have become more marketing savvy and the technique more prominent, it has shifted closer to the realm of conventional marketing At present, the question remains whether this tactic is still as effective as it was in the past, it is commonly believed that when advertisers cross the line and overwhelm the audience with blatant product placements, their efforts will backfire (Mandese 2006, Wei, Fischer, and Main 2008)

In this article, we adopt a longitudinal perspective and examine the evolution of the effectiveness of product placement in the movies over a 40-year time frame First, we provide a literature review that focuses on the history and the suggested efficacy of this marketing medium Second, we introduce our conceptual framework and present our hypotheses Third, we discuss the data and methodologies (event study and hierarchical linear modeling [HLM]) Fourth, we present and discuss our findings We conclude

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ISSN 0022-2429 (print), 1547-7185 (electronic)

with managerial implications, future research directions, and limitations

An Historical Perspective on Product Placement

Although many researchers believe that product placement was born when a little boy made an extraterrestrial friend by laying a trail of Reese's Pieces in *E T* (1982) (Newell, Salmon, and Chang 2006), other sources are starkly divided on its true origins For example, Karrh, McKee, and Pardun (2003) argue that product placement originated in the 1940s, while others suggest that this marketing medium can be traced back to the end of nineteenth century, when Lever Brothers' Sunlight soap was placed in several films (Newell, Salmon, and Chang 2006) However, most sources agree that the practice emerged as a legitimate marketing instrument in the mid-1970s and has been rapidly expanding since that time The biggest surge has arguably been during first decade of the twenty-first century (La Ferle and Edwards 2006) Product placement spending in the United States grew at an annual rate of almost 34% to $2 9 billion in 2007 and was projected to reach $5 6 billion in 2010 (PQ Media 2008)

In the early stages of its development, product placement was governed by ad hoc decisions and intuition (Steortz 1987) Branded placement was a casual process, in which branded items were donated, loaned, or purchased at a discount for particular scenes (DeLorme and Reid 1999) However, in the new millennium, the process of placing branded consumer products in feature films has gained mass appeal, becoming orderly and institutional, with clearly defined roles involving multiple parties and intermediaries (Karrh, McKee, and Pardun 2003) For example, NextMedium has propelled itself as a leader in the product placement arena by automating the process of product placement in the movies, television shows, and video games and even allowing product placement needs to be filled using an auction-based platform (Schonfeld and Borzo 2006) With more than 80% of national marketers using branded placement (Johannes 2006), the practice is certainly a part of today's mainstream marketing arsenal

Because of the proliferation of this marketing medium, consumers are becoming aware of product placement tactics and have started to show evidence of resistance to persuasion (Wei, Fischer, and Main 2008) In addition, in an ironic twist, product placements have now created a cluttered environment, which marketers initially designed the tactic to avoid Furthermore, consumers and industry participants are beginning to question whether the overabundance of placements detracts from the viewing experience and interferes with filmmakers' creative vision (e g , Writers Guild of America West 2005) Numerous Internet blogs are devoted to dissecting and mocking placement-heavy films (e g , http //www brandspotters com) Multiple consumer advocacy groups are calling on the Federal Trade Commission and other government agencies to curb and/or regulate product placement practices (e g , Commercial Alert 2003) This study provides an empirical examination of the effectiveness of product placements Thus, we forgo a detailed examination of related public policy issues, many of which are covered elsewhere (see the special section on covert marketing in the Spring 2008 issue of *Journal of Public Policy & Marketing*)

Product Placement Efficacy

Researchers have traditionally attributed the efficacy of product placement as a marketing medium to its ability to cut through advertising clutter by relying on transference mechanisms Instead of competing against a plethora of competitive advertisements in more traditional advertising channels, product placement acts in a more unobtrusive way by evoking the positive associations, aspirations, and symbolic meanings connected with the underlying movie content (Russell 1998) Excitation transfer theory (Zillmann 1996) also suggests that the excitement associated with film sequences can be transferred to other subsequently presented objects, including embedded products Labeled by the industry as "the anti-TiVo," product placements are also believed to be more effective in reaching the target audience than traditional advertising spots because they are immune to ad skipping (Schonfeld and Borzo 2006) Finally, product placements might circumvent consumer resentment by blurring the lines between commercial content and entertainment, thereby providing "advertainment" (Kretchmer 2004)

Academic studies on the efficacy of product placement to date have dealt with its economic value (Wiles and Danielova 2009), the effects of execution-related factors (e g , Gupta and Lord 1998, Russell 2002), cross-cultural differences in audience response (e g , Gould, Gupta, and Grabner-Krauter 2000, Karrh, Frith, and Callison 2001, Nebenzahl and Secunda 1993), and ethical concerns related to its use (e g , d'Astous and Seguin 1999, Gupta and Gould 1997, Nebenzahl and Secunda 1993, Wenner 2004) Table 1 summarizes the relevant literature on the efficacy of product placements (also see DeLorme and Reid 1999) In this study, we largely limit our inquiry to the first area—namely, the economic worth of placements

As listed in Table 1, there is an abundance of survey-based and experimental studies devoted to product placement However, empirical work that has investigated the impact of this marketing strategy on firm value is almost nonexistent In their conceptual framework, Balasubramanian, Karrh, and Patwardhan (2006) propose three conative outcomes of product placement (i e , purchase intentions, brand choice, and brand usage behavior) However, to measure the true efficacy of this marketing medium, we must ensure that these factors ultimately translate into firm value

At present, the consensus is that, despite the large spectrum of research on product placement, the economic value of a placement remains a pressing research question (Balasubramanian, Karrh, and Patwardhan 2006) We are aware of only one study that has attempted to evaluate the effect of product placement in movies on firm value In a cross-sectional study, Wiles and Danielova (2009) investigate price reactions for stocks of publicly traded companies that placed their brands in the 24 most popular movies of 2002 Their daily event study indicates that product place-

TABLE 1
Overview of Select Literature on Product Placement Efficacy

Study	Dependent Variable	Method	Sample	Findings
Wiles and Danielova (2009)	Stock price	Event analysis	24 most popular films, single year, 126 placements total	89% abnormal return over the (–2, 0) event window
Cowley and Barron (2008)	Brand recall	Survey	3532 French DVD viewers	Brand recall is enhanced when the respondents like the director or the movie
Wei, Fischer, and Main (2008)	Evaluations of embedded brands	Experiment	Three experiments with 81, 108, and 209 college students	Activation negatively affects evaluations of brands embedded in radio shows Perceived appropriateness and brand familiarity diminishes this negative effect, and activation with high brand familiarity can even reverse it
De Gregorio, Sung, and Jung (2007)	Attitude toward placements	Survey	3340 consumers	Most consumers are still positively disposed toward product placement, do not see a need for regulation, and have a tendency toward neutrality regarding certain elements associated with the practice
Lee and Faber (2007)	Brand recall	Experiment	155 college students	Brand recall is enhanced when the placement in computer games is incongruent with the brand
Balasubramanian, Karrh, and Patwardhan (2006)	N A	Conceptual	N A	Conative responses to product placements include purchase intention, brand choice, and brand usage behavior
Karrh, McKee, and Pardun (2003)	Practitioners' beliefs regarding placements	Survey	28 ERMA members	Practitioners believe that the number of placements will grow, leading to trade-offs between creative and financial concerns They also strongly believe that product placements increase product sales
Russell (2002)	Brand recall and attitude toward brand	Experiment	5 × 30 college students	Memory improves when modality and plot connection are incongruent, but persuasion is enhanced by congruency
Gupta and Gould (1997)	Attitude toward brand placement	Survey	1012 college students	A generally positive attitude exists toward brand placement The authors find that certain categories (e g , tobacco, guns) are less acceptable
Gupta and Lord (1998)	Recall of placed brands	Experiment	274 college students	Prominent product placements lead to greater recall Conventional advertising is a better strategy if prominent placement is unattainable or cost prohibitive
Babin and Carder (1996a)	Brand recognition	Experiment	98 college students	Subjects correctly identified brands that were present in or absent from the movie
Babin and Carder (1996b)	Brand salience	Experiment	108 college students	Salience is greater for placed brands but only for approximately one quarter of the product placements
Baker and Crawford (1996)	Attitude toward brand placement	Survey	43 postgraduate students	Most respondents had a neutral attitude toward brand placement
DeLorme, Reid, and Zimmer (1994)	Attitude toward brand placement	Focus group	29 college students	Generally positive attitude toward placements Negative attitude toward overexposed brands
Karrh (1994)	Recall of placed brands	Experiment	76 college students	Prominent product placements lead to greater recall and recognition The results are inconsistent across movies and brands
Ong and Meri (1994)	Recall of placed brands, purchase intentions for placed brands	Experiment	75 moviegoers	Generally positive attitude toward product placements but poor unaided recall No link between recall of placement in movies and increased purchase intentions
Vollmers and Mizerski (1994)	Recall of placed brands	Experiment	71 college students	96% of participants were aware of a brand placement, and 93% of participants correctly identified brands that had appeared in movies they had viewed

Notes N A = not applicable

ment in these movies resulted in 89% positive abnormal return over the (–2, 0) movie release event window[1] Surprisingly, the cumulative abnormal return (CAR) over the (–2, 1) time window was not significant, indicating a possible price reversal that takes place immediately after the movies' release Therefore, additional research on the efficacy of such a heavily used marketing medium is warranted In this study, we examine both blockbuster and nonblockbuster movies and extend this emerging research stream with a longitudinal examination of the value of product placements and related tie-in campaigns (i e , concurrent advertisement campaigns marketers use to accentuate the effect of placements)

Conceptual Framework

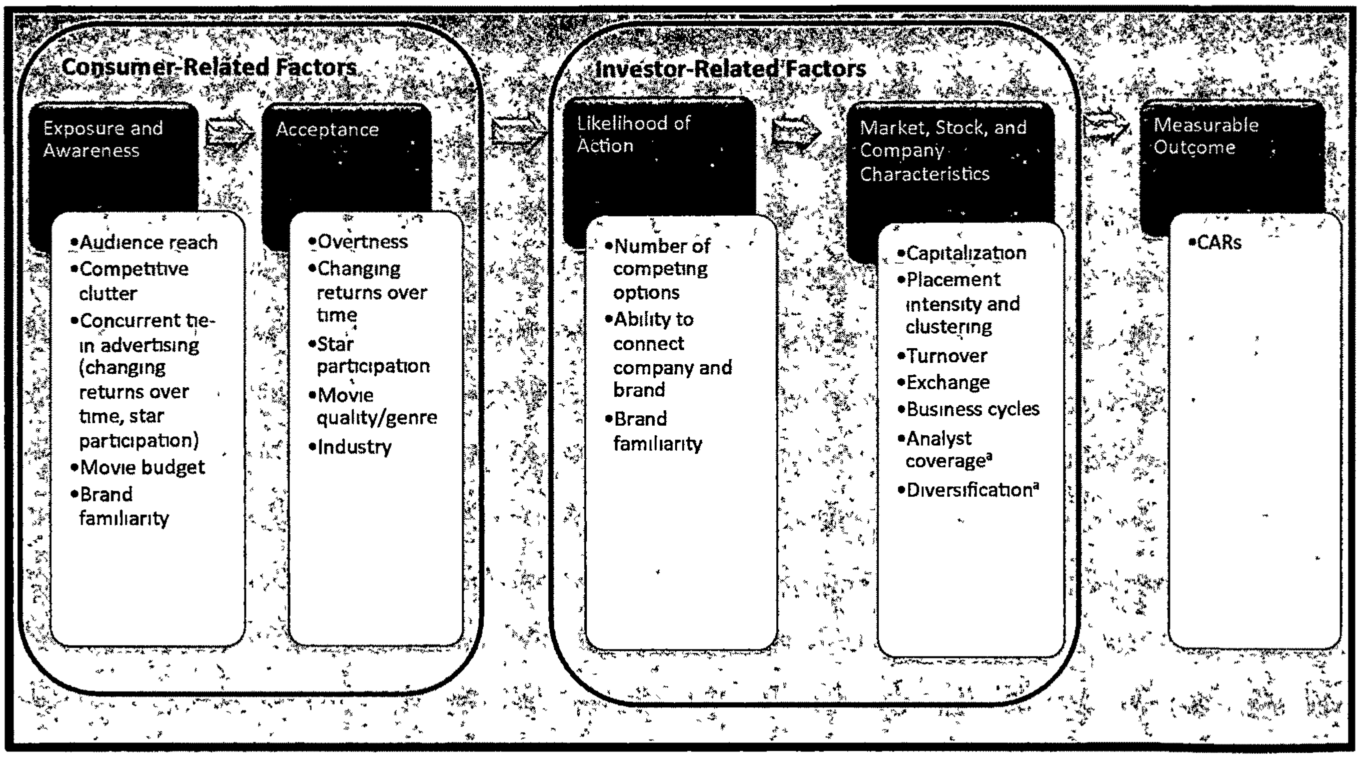
A possible explanation why so little research has been done to estimate the financial worth of product placements is the complex lagged effects of product placement on firms' cash flows Moreover, other concurrent activities affect cash flows and revenues, making it difficult to tease out the value product placement adds specifically We attempt to overcome this problem by analyzing stock market reaction to product placement

The efficient market theory (EMT) stipulates that stock prices reflect available information regarding a firm's future cash flows (Fama 1970) According to this theory, once information about the product placement is available to investors, the resulting change in stock price should reflect investors' expectations of the total change in future cash flows due to the product placement Our conceptual framework builds on the EMT, which posits that investors' responses to product placements are contingent on their expectations regarding customer behavior (see Figure 1) By measuring stock price reaction to the release of the movie in which the company's brand is featured, we estimate the incremental value that the investors place on that product placement We introduce several factors related to the placements' ability to resonate with moviegoers, and produce the desired effect In addition, we introduce information-processing effects and market-related controls because they can influence investors' willingness and ability to invest in brands that are placed in feature films and our ability to detect abnormal returns Next, we discuss the conceptual framework and its key factors in more detail

Exposure and Awareness

For the markets to register a response to product placements, consumers first must become aware of or at least exposed to the placement (Exposure would be sufficient if we posit that placements act on a subliminal level) Therefore, our framework accounts for audience reach In addition, it considers the possible effects of competitive clutter

FIGURE 1
Conceptual Framework



[a]Factors that may offer alternative explanations for time-related effects See the "Robustness Checks" section for details

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[1]In event studies, the defined event (in this case, the release of the movie with a given placement) takes place at Time 0 Therefore, (–2, 0) event window represents the time from two trading days before the release date through the release date

within the same movie because excessive product placements can create consumer information overload (Malhotra, Jain, and Lagakos 1982) and decrease the attention given to each placement.

Srinivasan and Hanssens (2009) note that product innovation has a greater impact on firm value when coupled with greater advertising support. It is possible that product placements that are tied to concurrent traditional advertising/sales promotion campaigns also generate higher returns because they can create more traction with consumers. To control for this, we incorporate promotional tie-in campaigns into the framework. The framework also recognizes that the effectiveness of the tie-in campaigns can follow a certain trajectory over time (e.g., an inverted U-shaped trajectory suggested by the habituation–tedium theory that we discuss subsequently) and be affected by additional drivers such as A-list celebrity participation.

To account for the awareness of the movie before its release, we incorporate adjusted production budget, which research has found to be highly correlated with advertising spending (Ravid and Basuroy 2004) because advertising data are not available for the majority of time frame covered by our study. Moreover, the framework includes brand familiarity because it can influence the awareness and acceptance of the placement effort.

Acceptance

In addition to exposure, consumers should also be receptive to buying the products placed in the movies. More prominent placements could be more memorable; at the same time, consumers can show resistance to over-the-top marketing efforts and exhibit general anticonsumption tendencies in various settings (Cherrier 2009; Close and Zinkhan 2009). Some placements can be so overt (e.g., repeated placements of the same brand within the film) that the centrality of the brand/product to the plot can alert the viewers to the placement effort and even cause resentment. Therefore, we incorporate overtness of the placement in our framework.

Meanwhile, growing resentment of product placements could give rise to negative time effects, and familiarity with the medium and increased product placement expertise of marketers could give rise to positive time effects. We also include the actors' star power in the framework because it can influence the acceptance level of the placed brands if the stars are perceived as endorsers. The degree of annoyance might be greater when placements are embedded in poor-quality films. In addition, we anticipate that certain movies and movie genres are less suitable for product placement. Consequently, our framework includes control variables related to observed and unobserved movie heterogeneity. In addition, we include industry classification because product placement activities might be more (less) successful in generating value according to industry membership of the firms making the placements. Mundane, industrial products might be less memorable, while consumer goods might generate more buzz and excitement through placement.

Likelihood of Investor Action

It is understood that enhancing brand equity enhances the firm's market valuation (Srinivasan and Hanssens 2009). However, the ability to connect the brand to its parent company is critical because failure to do so can restrict the flow of funds to the firm. Finance literature has demonstrated that there is significant confusion on the part of "noise traders" (i.e., investors whose decisions to buy, sell, or hold are not based on company's fundamentals [Black 1985]) when it comes to the ticker symbol–company connection. For example, Rashes (2001) reports on the comovement of stocks with similar ticker symbols. There is significant correlation between returns, volume, and volatility of these ticker pairs at short frequencies. Furthermore, the impact of product placement on a company's stock price is likely to be quicker and less noisy when there is a clear and straightforward connection between the featured brand and the parent company. Therefore, we distinguish between the companies whose name and ticker symbols are closely tied to a focal brand and the companies for which the immediate connection between the brand and corresponding security is more difficult to establish.

Our framework also incorporates other competing options (i.e., other placements in the movie) because they have the potential to decrease the resource flows to the focal security and create additional clutter (as we described previously in the "Exposure and Awareness" section). In addition, brand familiarity (relevant to consumer response) can also be relevant when it comes to investor action; for example, the marketing literature has indicated that brands that are less familiar to investors (and analysts) might be systematically undervalued (Srinivasan and Hanssens 2009).

Market- and Stock-Related Characteristics

The framework incorporates traditional factors related to market quality (e.g., market structure, liquidity, analyst coverage). In addition, we control for variables that might affect our ability to detect abnormal returns. A marketing action's impact is often difficult to measure because there are many marketing activities that take place concurrently. In the case of diversified companies, it is even more difficult because multiple brands in multiple industries are marketed using different strategies, and multiple contaminating events come into play, creating measurement noise. Therefore, we control for the firms' degree of diversification because the increase in firms' diversification over time (as Rumelt [1974] notes) could influence our findings with respect to time effects. Finally, market conditions might moderate the strength of market response to product placements; therefore, we consider business-cycle effects an alternative explanation for time-related effects.

Hypotheses

There are several product placement intermediaries/marketing research firms that use proprietary models to value branded entertainment (e.g., Brand Advisors, Delivery Agent, IEG, Image Impact, Intermedia Advertising Group, iTVX, Joyce Julius & Associates, Millward Brown, NextMedium [Embed], Nielsen IAG [Place*Values], Propaganda Entertainment Marketing) However, because the models and methods that these companies employ are proprietary, they are typically not available for examination In light of the limited evidence from academic studies (Wiles and Danielova 2009) and limited industry information, there is a need to examine the overall economic worth of the product placement strategy using a large sample We begin by examining the general connection between product placement and firm value

H_1 Product placements (in the movies) increase firm value

In the case of product placement, initial stock price reaction to product placement may be affected by noise trading, naive investors are known to buy stocks that have appeared in the news (Barber and Odean 2008), have been advertised in periodicals (Jain and Wu 2000), and have even been mentioned in spam e-mails (Frieder and Zittrain 2007) However, noise trading is not based on fundamental information regarding company's value, so it does not have a permanent effect on the market prices If price run-ups associated with product placements were a result of noise trading, the resulting gains would be unsustainable, and stock prices would quickly return to their original state We address this possibility in our second hypothesis

H_2 The increase in firm value in response to product placement is persistent

Because currently, there are few studies exploring specific theoretical underpinnings of product placement marketing medium, we rely on theories relevant to the advertising domain to develop the next set of hypotheses We acknowledge that not all product placements are paid for and/or have identifiable sponsors, which might exclude them from the traditional advertising domain However, advertising literature seems relevant because most placements tend to be paid for in some form (Balasubramanian, Karrh, and Patwardhan 2006), and more important, these theories have proved to be relevant in settings beyond traditional advertising (e g , Karniouchina, Moore, and Cooney 2009)

Habituation–tedium theory (Sawyer 1981, Tellis 2004), which is based on Berlyne's (1970) two-factor model, suggests a two-stage process that governs response to repeated messages The first stage (wear-in) is related to habituation, and the second stage (wear-out) is connected to tedium When consumers are first exposed to novel advertising stimuli, they experience tension Repeated exposure reduces the apprehension through habituation, which initially leads to more positive response However, as the number of exposures exceeds a certain level, boredom and resentment set in, and attitude toward the ad as well as response diminish, the two forces lead to an inverted U-shaped relationship between the number of exposures and ad response

Numerous studies have explored the effects of repeat exposure to advertising on consumer attitudes and purchase intentions Vakratsas and Ambler (1999) review the advertising literature regarding repeat exposure and find diminishing returns in short-term advertising effectiveness[2] That is, after a certain point, additional advertising impressions become ineffective While there is some disagreement regarding the intensity of consumer response to consecutive advertising exposures (e g , Little 1979, Simon and Arndt 1980, Tellis 2004), the majority opinion seems to lie with the inverted U-shaped relationship between the number of exposures and attitude formation, indicating wear-in and wear-out effects consistent with habituation–tedium theory (also see Appel 1971, Blair 2000)

What distinguishes our study from the aforementioned work is that we extend the examination of the wear-in and wear-out effects associated with repeat placements for individual brands by considering the wear-in/out effects associated with the product placement marketing medium in general and the tie-in campaigns used to enhance its effectiveness In addition to the underlying habituation–tedium dynamics appearing on the consumer end, it is also possible that marketers initially gained benefits from learning to place products more effectively and run and optimize the tie-in campaigns Industry sources suggest that Madison Avenue is constantly "learning more about what not to do with product placement than what works best, especially when it comes to research and testing on consumer reactions to branded-entertainment deals" (Mandese 2006, p 2) Therefore, a combination of consumer habituation, industry learning, and diminishing returns effects would suggest a curvilinear relationship between product placement effectiveness, concurrent tie-in campaigns, and time

H_3 The longitudinal effect of product placement on firm value follows an inverted U-shaped relationship

H_4 The longitudinal effect of tie-in campaigns on firm value follows an inverted U-shaped relationship

We are aware of only one other study that examines the habituation–tedium dynamics when it comes to a novel advertising form Edwards and Gangadharbatla (2001) examine the success of three-dimensional online product presentations in an experimental setting They find that for study participants with limited prior exposure to this advertising medium, the novelty of the advertisement interfered with information processing and thus adversely affected purchase intentions This is consistent with the habituation notion of the previously described two-step process, however, because of the novelty of the examined medium, the aforementioned study was not able to examine the effect of tedium (Schumann and Thorson 2007) The advantage of analyzing the product placement medium is that we can analyze this form of advertisement from the early stage in its development through the point at which the tedium dynamics have been established (Wei, Fischer, and Main 2008)

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[2] The law of diminishing returns is an empirical regularity found in many economic relationships It stipulates that after a certain point, with all other inputs held constant, the marginal benefit from adding one more unit of input drops as that input increases (Samuelson and Nordhaus 2001) This law has been applied in several advertising contexts (Picard 1989) For example, Horsky and Simon (1983) build a successful diffusion model that relies on two fundamental properties of advertising lagged effects and diminishing returns

Data and Methods

In this study, we employ the Brand Hype Movie Mapper data set. Brand Hype (University of Concordia) is an educational resource that includes a searchable movie/brand placement data set starting with 1968. Our investigation is based on the 1968–2007 time frame and uses 928 product placement observations (linked to 159 films) that have sufficient financial data for our analysis (for a list of the firms making the product placements, see Table 2). The average opening box office revenue in our sample is $18.3 million, which is significantly lower than the $44.8 million average Wiles and Danielova (2009) report. Therefore, the sample used in this study represents a broader cross-section of small and blockbuster films.

The Brand Hype data set was originally conceived as a collaborative data set (as was IMDb at its early stage of development). However, to date, the vast majority of data collection effort has been carried out by a graduate research assistant assigned to this project at the University of Concordia. We excluded the few wiki-like entries (related to foreign films, which the data set creators identified to us) from our analysis. For financial information on companies and their stock prices, we accessed the Center for Research in Security Prices (CRSP) database for stock-related data, the COMPUSTAT segments database for data needed to compute diversification measures, and the I/B/E/S database for data related to analyst coverage.

Event Study Model

Event studies that examine the impact of marketing actions on firm value are becoming popular in marketing research (e.g., Sood and Tellis 2004, Wiles and Danielova 2009). We contribute to this emerging research tradition and employ an event study methodology to detect market reaction to product placements. We assume that the event (or movie release) takes place at t = 0, and we use the estimation window preceding the event to estimate the normal or expected return. To predict normal performance, we use the traditional market model and the four-factor model that augments the market model by adding several well-documented market abnormalities (Carhart 1997, Fama and French 1996).

$$(1) \quad R_{it} = \alpha_i + \beta_i R_{mt} + s_i SMB_t + h_i HML_t + u_i UMD_t + \varepsilon_{it},$$

where

R_{it} = the return of stock i at time t,
R_{mt} = the monthly return on the CRSP equally weighted index,
β_i = a measure of stock i's sensitivity to market changes,
ε_{it} = generalized autoregressive conditional heteroskedasticity (GARCH) error term,
SMB_i = average return on small minus average return on large stock portfolios,
HML_t = average return on high minus average return on low book-to-market stock portfolios, and
UMD_t = average return on high minus average return on low performing stock portfolios.

Using the four-factor model, we define abnormal returns as follows:

$$(2) \quad AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt} + \hat{s}_i SMB_t + \hat{h}_i HML_t + \hat{u}_i UMD_t),$$

where $\hat{\alpha}_i$, $\hat{\beta}_i$, $\hat{s}_i$, $\hat{h}_i$, and $\hat{u}_i$ are GARCH (1, 1) estimates of α_i, β_i, s_i, h_i, and u_i.

We used the GARCH (1, 1) estimation method (as Bollerslev [1986] suggests) because it allows the conditional variance to change as a function of both previously realized residuals and past variances. Boehmer, Musumeci, and Poulsen (1991) and Corhay and Rad (1996) provide evidence that event-study regression models that account for time-varying conditional variance properties and stochastic parameters lead to more efficient estimators of parameters and thus promote more robust conclusions than traditional event-study methodologies.

Identifying the appropriate data interval to estimate advertising effects is one of the most challenging questions in marketing research (Tellis and Franses 2006). The task becomes even more complicated when the objective is to isolate the impact of product placement on the market value of the firm. It is possible that information regarding product placements affects the market before the movie release (e.g., due to information leaked by industry insiders). Therefore, we began by estimating abnormal returns 30 trading days (six weeks) before the release date. Next, we extended this window because most movies collect the vast majority of their revenues over a ten-week period (there are sharp drop-off rates associated with this product category). The resulting broad time window is (–30, 50). Our choice of the time window that is broader than a few days around the event date is consistent with the common practice adopted in finance (e.g., MacKinlay 1997). Next, we adjusted this window according to the empirical results. The majority of the reaction takes place within a (–10, 16) event window (see Figure 2), thus, we focused the rest of our analysis on this time window, which roughly corresponds to two business weeks before and three business weeks after the movie release. We further verify the appropriateness of the event window by examining pre– and post–event window returns. Cumulative abnormal returns for various pre– and post–event window time frames, such as (–30, –11), (–20, –11), (17, 20), (17, 30), and (17, 50), are not significant.

We empirically control for event clustering and use statistical tests that account for autocorrelation and event-induced volatility, that is, we use a standardized cross-sectional test that is better suited than the conventional standard deviation test to deal with autocorrelation and event-induced volatility. It is more powerful than the Brown–Warner test (Brown and Warner 1985) but is equally well specified (Boehmer, Musumeci, and Poulsen 1991).

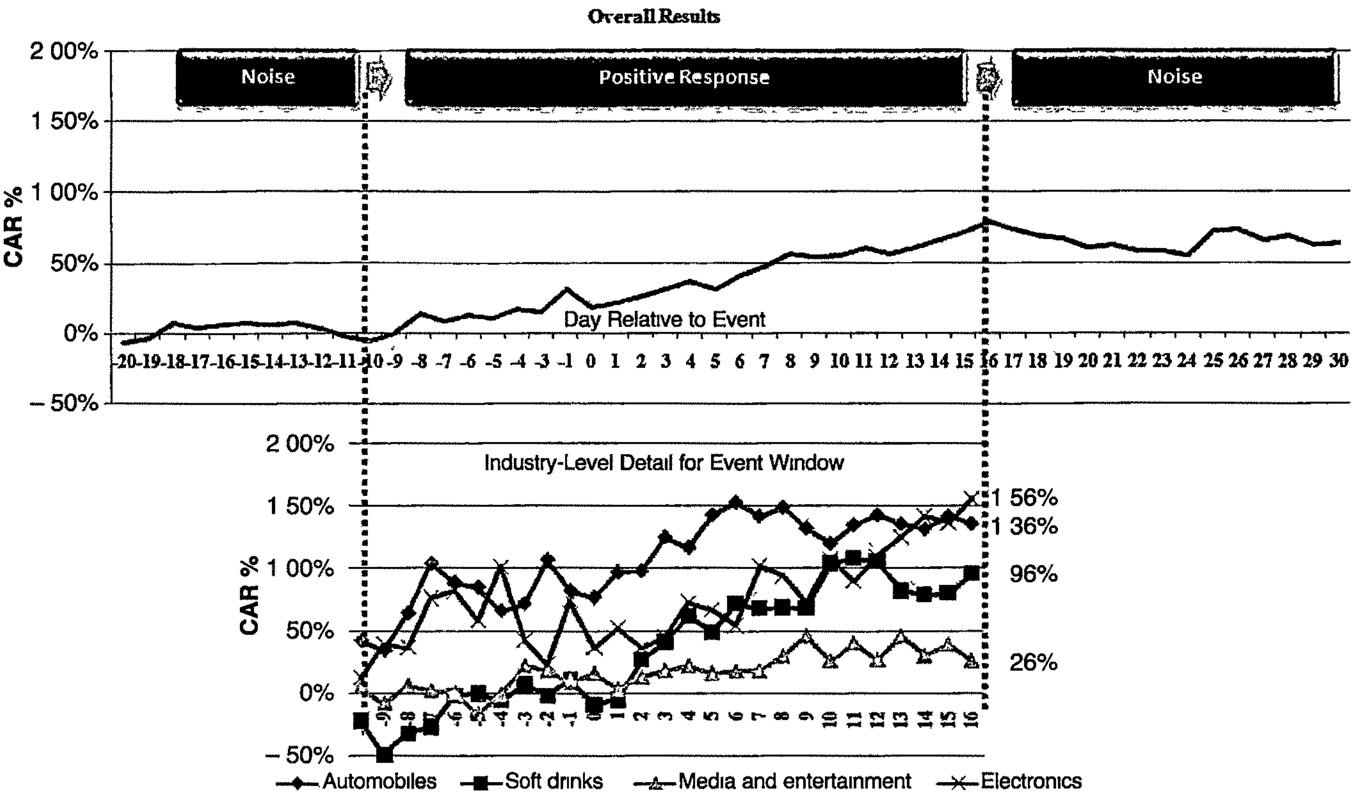
Multilevel Mixed Coefficient Model (Hierarchical Linear Modeling)

The drivers in our conceptual model relate to either a particular placement or a particular motion picture in which the placement was embedded (Figure 1). In addition, the brand placements we analyze in this study belong to different industries. Multilevel models focus on the analysis of data with such complex patterns of variance (i.e., nested structures, Luke 2004). Marketing researchers have been using multilevel models increasingly because they can model

TABLE 2
Firms with Product Placement in the Sample

Company	Frequency	Company	Frequency	Company	Frequency
Coca-Cola Co	75	ConAgra Foods Inc	3	Del Monte Foods Co	1
PepsiCo Inc	61	Costco Wholesale Corp	3	Domino's Pizza Inc	1
General Motors Corp	45	Dr Pepper Snapple Group	3	Donna Karan International Inc	1
Anheuser-Busch Cos Inc	34	Gannett Co Inc	3	Dow Jones & Co Inc	1
Procter & Gamble Co	32	The Hershey Co	3	Dunkin Donuts	1
Apple Computer Inc	29	Intercontinental Hotels	3	DynCorp International Inc	1
Daimlerchrysler AG	28	Molson Coors Brewing Co	3	eBay Inc	1
Sony Corp	27	Philip Morris International Inc	3	Energizer Holdings Inc	1
Time Warner Inc	27	Polo Ralph Lauren Corp	3	Ericsson L M Telephone Co	1
Diageo plc	18	Reynolds American Inc	3	Foot Locker Inc	1
NIKE Inc	18	Sears Holdings Corp	3	GlaxoSmithKline PLC	1
The Walt Disney Co	16	Wyeth	3	Groupe Danone	1
News Corp	15	YUM! Brands Inc	3	Gulf Oil Limited Partnership	1
McDonald's Corp	13	Bank of America Corp	2	Halliburton Company	1
Unilever NV	13	Bristol-Myers Squibb Co	2	H J Heinz Co	1
Cadbury Schweppes GmbH	12	The British Petroleum Co PLC	2	Holiday Cos	1
General Mills Inc	12	Cendant Corp	2	Home Depot Inc	1
Altria Group Inc	11	Chevron Corp	2	Hanes Brands Inc	1
Microsoft Corp	11	Clorox Co	2	Intel Corp	1
FedEx Corp	10	Compaq Computer Corp	2	Estee Lauder Inc	1
Kraft foods inc	10	Deere & Co	2	Liz Claiborne Inc	1
Matsushita Electric Industrial Ltd	10	The Dow Chemical Co	2	Luxottica Group S p A	1
Motorola Solutions Inc	10	Federated Department Stores Inc	2	Marriott International Inc	1
The New York Times Co	10	Fortune Brands Inc	2	Marvel Entertainment LLC	1
Eastman Kodak Co	9	Fuji Photo Film	2	The McClatchy Co	1
Toyota Motor Corp	9	Harrah's Entertainment Inc	2	Meredith Corp	1
Viacom Inc	9	Hewlett-Packard Co	2	NTL Inc	1
AOL Inc	8	JPMorgan Chase & Co	2	Palm Inc	1
Nokia Corp	8	Jones Apparel Group Inc	2	Payless Shoesource Inc	1
Starbucks Corp	8	Krispy Kreme Doughnuts Inc	2	Pearson PLC	1
Washington Post Co	8	Eli Lilly & Co	2	Red Hat Inc	1
Campbell Soup Co	7	Limited Brands Inc	2	Reed Elsevier Group PLC	1
Adolph Coors Co	7	Martha Stewart Living Omnimedia Inc	2	Reuters Group PLC	1
Dell Inc	7	Morgan Stanley Dean Witter & Co	2	Revlon Inc	1
General Electric Co	7	Phillips-Van Heusen Corp	2	Riviera Holdings Corp	1
Google Inc	7	Prentiss Properties Trust	2	Sara Lee Corp	1
Johnson & Johnson	7	Prudential Financial Inc	2	Sea Containers Ltd	1
Pfizer Inc	7	Sanyo Electric Co Ltd	2	Skechers U S A Inc	1
AMR Corp	6	Schering Plough Products Corp	2	Smith & Wesson Holding Corp	1
Hasbro Inc	6	Starwood Hotels & Resorts Worldwide Inc	2	Sprint Nextel Corp	1
Koninklijke Philips Electronics NV	6	Target Corp	2	Staples Inc	1
Mattel Inc	6	VF Corp	2	Sunoco Inc	1
William Wrigley Jr Co	6	Wal-Mart Stores Inc	2	The TJX Companies Inc	1
AT&T Inc	5	3M Co	1	Talbots Inc	1
Brown-Forman Corp	5	Air France KLM	1	Telecom Italia S p A	1
Church & Dwight Co Inc	5	Alcoa Inc	1	Tiffany & Co	1
Ford Motor Co	5	Allied Domecq PLC	1	Tootsie Roll Industries Inc	1
The Gap Inc	5	Amazon com Inc	1	Toys "R" Us Inc	1
International Business Machines Corp	5	Applebee's International Inc	1	Tricon Global Restaurants Inc	1
Tribune Company	5	BP PLC	1	UAL Corp	1
Verizon Communications Inc	5	Berkshire Hathaway Inc	1	USA Network	1
American Express Co	4	Borders Group Inc	1	United Parcel Service Inc	1
Goodyear Tire & Rubber Co	4	Boyd Gaming Corp	1	Vodafode Group PLC	1
Honda Motor Co Ltd	4	British American Tobacco	1	Warner Communications Inc	1
Kellogg Co	4	CBS Corp	1	Warner-Lambert Co	1
Kimberly-Clark Corp	4	Canon Inc	1	Whirlpool Corp	1
Playboy Enterprises Inc	4	Capital One Financial Corp	1	Yahoo! Inc	1
TDK Corp	4	Cisco Systems Inc	1		
Colgate Palmolive Co	3	CNH Global NV	1	Total	928

FIGURE 2
CARs to Product Placements (with Detail by Industry)



various multilevel market phenomena (e.g., Inman, Winer, and Ferraro 2009).

Additional levels render the model more general and often more useful because when a hierarchy exists, an analysis of data aggregated from different levels may produce inaccurate and unreliable results (Kreft and De Leeuw 2002). For example, with nested structures, the assumption of independent errors is violated (observations belonging to the same higher-level unit tend to covary), rendering the traditional regression approaches that rely on this assumption inadequate. In the context of this study, hierarchical linear modeling (HLM) enables us to consider several levels of analysis (i.e., the movie, industry, and placement levels) to capture unobserved movie- and industry-level heterogeneity and analyze cross-level interactions when it comes to time-related effects. After aggregating abnormal returns and assessing the significance of CARs across different periods, we estimate an HLM that links the CARs to variables reflected in our conceptual framework. We confine the drivers to their respective levels (see Figure 3).

In the HLM model, the dependent variable is CAR over the (−10, 16) time window. We modeled CAR as a function of brand placement–related (Level 1), movie-related (Level 2), and industry-related (Level 2) factors. We cross-classified the model because at each level, one unit is simultaneously classified by two higher-level effects (i.e., movie and industry).

Tables 3 and 4 present the variables used and their sources. Table 5 presents descriptive statistics for the variables used in estimation.

The Level 1 Model

$$
\begin{aligned}
\text{(3) } \mathrm{CAR}_{ijk} = {} & \pi_{0jk} + \pi_{1jk}(\text{BRAND–TICKER MATCH})_{ijk} \\
& + \pi_{2jk}(\text{TIE-IN CAMPAIGN})_{ijk} \\
& + \pi_{3jk}(\text{NUMBER OF OTHER BRANDS FROM SAME FIRM})_{ijk} \\
& + \pi_{4jk}(\text{NUMBER OF APPEARANCES WITH MAIN CHARACTER})_{ijk} + \pi_{5jk}(\text{TURNOVER})_{ijk} \\
& + \pi_{6jk}(\text{NYSE})_{ijk} + \pi_{7jk}(\text{NASDAQ})_{ijk} \\
& + \pi_{8jk}\ln(\text{ADJUSTED MARKET CAPITALIZATION})_{ijk} \\
& + \pi_{9jk}(\text{BRAND CLUSTERING})_{ijk} \\
& + \pi_{10jk}(\text{OVERALL CLUSTERING})_{ijk} \\
& + \pi_{11jk}(\text{BRAND FAMILIARITY})_{ijk} \\
& + \pi_{12jk}(\text{PLACEMENT INTENSITY})_{ijk} + \varepsilon_{ijk},
\end{aligned}
$$

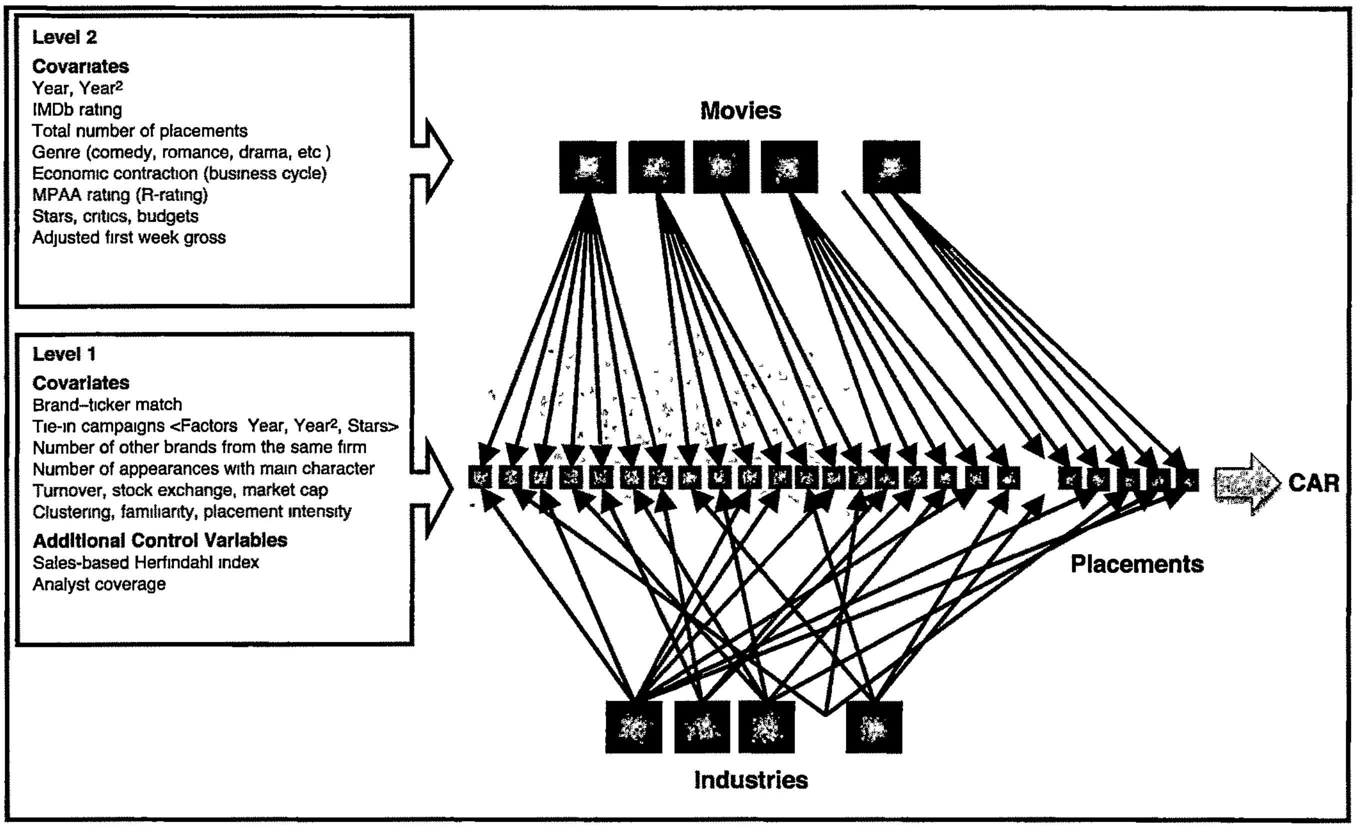
where

CAR_{ijk} = the cumulative abnormal return over the (−10, 16) event window that pertains to placement i in movie j in industry k,

π_{0jk} = the intercept or average CAR for a product placement in movie j industry k,

$\varepsilon_{ijk} \sim N(0, \sigma^2)$ = Level 1 within-the-cell random effect measured by the deviation of CAR asso-

FIGURE 3
HLM Modeling Approach


Level 2
Covariates
Year, Year^2
IMDb rating
Total number of placements
Genre (comedy, romance, drama, etc.)
Economic contraction (business cycle)
MPAA rating (R-rating)
Stars, critics, budgets
Adjusted first week gross
Level 1
Covariates
Brand–ticker match
Tie-in campaigns <Factors Year, Year^2, Stars>
Number of other brands from the same firm
Number of appearances with main character
Turnover, stock exchange, market cap
Clustering, familiarity, placement intensity
Additional Control Variables
Sales-based Herfindahl index
Analyst coverage
Movies
CAR
Placements
Industries

ciated with placement i in movie j industry k from the predicted outcome based on the Level 1 descriptors

The Level 2 model has two levels because it estimates the impact of the characteristics of movie j and industry k on the size of the CAR The model incorporates an unobserved movie- and industry-level heterogeneity, which we model with random effects, and the observed movie heterogeneity, which we model with several fixed movie-level variables We incorporated potential curvilinear effects central to our hypotheses by introducing YEAR and YEAR^2 variables

The Level 2 Model

$$
\begin{aligned}
(4)\quad \pi_{0jk} = {} & \theta_0 + \gamma_{01}(\text{YEAR})_j + \gamma_{02}(\text{YEAR}^2)_j \\
& + \gamma_{03}(\text{IMDB USER RATING})_j \\
& + \gamma_{04}(\text{TOTAL PLACEMENTS})_j + \gamma_{05}(\text{COMEDY})_j \\
& + \gamma_{06}(\text{CRIME})_j + \gamma_{07}(\text{ROMANCE})_j + \gamma_{08}(\text{DRAMA})_j \\
& + \gamma_{09}(\text{ACTION})_j + \gamma_{010}(\text{HORROR})_j + \gamma_{011}(\text{SCIFI})_j \\
& + \gamma_{012}(\text{THRILLER})_j + \gamma_{013}(\text{R-RATING})_j \\
& + \gamma_{014}(\text{ECONOMIC CONTRACTION})_j \\
& + \gamma_{015}(\text{STAR\_NEXT})_j + \gamma_{016}(\text{CRITICS})_j \\
& + \gamma_{017}\ln(\text{ADJUSTED BUDGET})_j \\
& + \gamma_{018}\ln(\text{ADJUSTED FIRST-WEEK GROSS})_j \\
& + b_{00j} + c_{00k},
\end{aligned}
$$

where

θ_0 = the model intercept or $E[\pi_{0jk}]$ when all the nondummy explanatory variables are set to the mean and all the dummy variables are set to 0,

b_{00j} = the residual random effect associated with movie j, ~N (0, τ_{b00}), and

c_{00k} = residual random effect associated with industry k, ~N (0, τ_{c00})

Finally, we assume most Level 1 coefficients to be fixed However, we model the effectiveness of tie-in campaigns and the time-related dynamics describing their effectiveness by introducing cross-level interactions The Level 1 coefficients are as follows

$$
\begin{aligned}
\pi_{1jk} &= \theta_1, \\
\pi_{2jk} &= \theta_2 + \gamma_{21}\text{YEAR} + \gamma_{22}\text{YEAR}^2 + \gamma_{23}\text{STAR\_NEXT}, \\
\pi_{3jk} &= \theta_3, \\
\\
\\
\pi_{12jk} &= \theta_{12}
\end{aligned}
$$

TABLE 3
Level 1 Variables

Variable	Description	Rationale for Inclusion	Source	Relationship to Conceptual Framework
CAR$_{ijk}$	CAR for firm that owns brand i (in industry k) that appeared in movie j over a (–10, 16) event window	Dependent variable, widely accepted measure of economic worth	EVENTUS	Measureable outcome
BRAND–TICKER MATCH $_{ijk}$	Dummy variable that takes a value of 1 if a brand can be easily mapped to its owner (i e , brand name search on Yahoo! Finance produces the ticker of the parent company)	Noise traders have been shown to be confused by stock tickers The variable also indirectly controls for company diversification	Yahoo! Finance	Likelihood of action ability to connect company and brand
TIE-IN CAMPAIGN $_{ijk}$	Dummy variable that takes a value of 1 for placements with concurrent tie-in campaigns Based on detailed review of news archives (±one month of the movie release date)	Measuring impact of tie-ins and existence of time-related effects after additional time-related variables are added (H_4)	LexisNexis search for brand and movie title	Exposure and awareness
NUMBER OF OTHER BRANDS FROM SAME FIRM$_{ijk}$	Total number of brands belonging to the same company i in movie j Mean centered	Competitive clutter, competing investment options	Brand Hype	Exposure and awareness/likelihood of action
NUMBER OF APPEARANCES WITH MAIN CHARACTER$_{ijk}$	Number of times the brand appeared with the main character throughout the film Mean centered	Proxy for placement overtness	Brand Hype	Acceptance
TURNOVER $_{ijk}$	Daily share trading volume of company's stock divided by the number of shares outstanding (averaged over 30 days before event window)	Control variable, captures trading intensity and liquidity	CRSP	Market, stock, and company characteristics
NYSE$_{ijk}$	Dummy variable that takes a value of 1 if the stock is traded on the New York Stock Exchange AMEX serves as a base category	Control variable for stock exchange	CRSP	Market, stock, and company characteristics
NASDAQ$_{ijk}$	Dummy variable that takes a value of 1 if the stock is traded on the NASDAQ AMEX serves as a base category	Control variable for stock exchange	CRSP	Market, stock, and company characteristics
ADJUSTED MARKET CAPITALIZATION$_{ijk}$	Regressions included a customary ln transformation of this variable instead of its raw value Mean centered	Control variable for company characteristics	CRSP	Market, stock, and company characteristics
BRAND CLUSTERING$_{ijk}$	Number of product placements of the same company within two weeks before and two weeks after the focal movie release	Control variable for placement intensity and measurement noise	Brand Hype	Market, stock, and company characteristics
OVERALL CLUSTERING$_{ijk}$	Number of all product placements within two weeks before and two weeks after the focal movie release	Control variable for number of competing options	Brand Hype	Likelihood of action/market, stock, and company characteristics
BRAND FAMILIARITY$_{ijk}$	Number of *Wall Street Journal* mentions during the year preceding the release of the film Mean centered	Control variable for brand familiarity, affects exposure, awareness, and persuasiveness of brand communication	*Wall Street Journal*	Exposure and awareness/likelihood of action
PLACEMENT INTENSITY$_{ijk}$	Number of previous placements divided by time from the first placement Mean centered	Control variable, measures overall intensity of placements for focal brand	Brand Hype	Exposure and awareness/market, stock, and company characteristics
DIVERSIFICATION$_{ijk}$	Sales-based Herfindahl index Control variable, not in final model	Alternate explanation for change in effectiveness over time	COMPUSTAT	Market, stock, and company characteristics
ANALYST COVERAGE$_{ijk}$	Number of analysts covering stock in a given year Not in final model	Alternate explanation for change in effectiveness over time	I/B/E/S	Market, stock, and company characteristics

TABLE 4
Level 2 Variables

Variable	Description	Rationale for Inclusion	Source	Relationship to Conceptual Framework
YEAR$_j$, YEAR SQUARED$_j$	Year of release for movie j Mean centered	Habituation–tedium dynamics, testing H_3 and H_4	IMDb	Acceptance
IMDB RATING$_j$	IMDb user rating for movie j Mean centered	Captures movie quality and likability	IMDb	Acceptance
TOTAL PLACEMENTS$_j$	Total number of brand placements in movie j (Brand Hype data set) Mean centered	Competitive clutter Number of competing investment options	Brand Hype	Exposure and awareness/likelihood of action
COMEDY$_j$	Dummy variable taking a value of 1 if movie j is a comedy	Some genres could be more/less suitable to serve as a backdrop for placements	IMDb	Acceptance
CRIME$_j$	Dummy variable taking a value of 1 if movie j falls under the crime category	See preceding item	IMDb	Acceptance
ROMANCE$_j$	Dummy variable taking a value of 1 if movie j falls under the romance category	See preceding item	IMDb	Acceptance
DRAMA$_j$	Dummy variable taking a value of 1 if movie j is a drama	See preceding item	IMDb	Acceptance
ACTION$_j$	Dummy variable taking a value of 1 if movie j falls under the action category	See preceding item	IMDb	Acceptance
HORROR$_j$	Dummy variable taking a value of 1 if movie j falls under the horror category	See preceding item	IMDb	Acceptance
SCIFI$_j$	Dummy variable taking a value of 1 if movie j falls under the science fiction category	See preceding item	IMDb	Acceptance
THRILLER$_j$	Dummy variable taking a value of 1 if movie j falls under the thriller category	See preceding item	IMDb	Acceptance
R-RATING$_j$	Dummy variable taking a value of 1 if the movie j received an R rating from the MPAA	Violence, bad language, and so on could interfere with information processing (Wiles and Danielova 2009)	IMDb	Acceptance
ECONOMIC CONTRACTION$_j$	Dummy variable taking a value of 1 when economy is in recession	Business cycles influence consumer response to advertisements and consequently investors' desire to invest	NBER	Market, stock, and company characteristics
STAR NEXT$_j$	Dummy variable taking a value of 1 if a major star involved in the film had a blockbuster within three years before movie's release	Star power can make placements more visible and memorable	IMDb	Acceptance
CRITICS$_j$	Composite score on 1–100 scale	Movie's critical acclaim is known to be negatively associated with placement effectiveness (Wiles and Danielova 2009)	Meta-Critic, Rotten Tomatoes	Acceptance
ADJUSTED BUDGET$_j$	Production budget adjusted for inflation using historical movie ticket prices Natural log-transformed, mean centered	Captures movie's pre-release visibility	IMDb, industry sources, MPAA	Exposure and awareness
ADJUSTED FIRST-WEEK GROSS$_j$	Opening week numbers from Internet Movie Database (imdb com), adjusted for inflation using historical movie ticket prices Natural log-transformed, mean centered	Captures audience reach	IMDb, MPAA	Exposure and awareness

Notes Genre variables are not mutually exclusive Non-R-rated movies serve as the base category MPAA = Motion Picture Association of America, and NBER = National Bureau of Economic Research

TABLE 5
Descriptive Statistics

	N	M	SD	Minimum	Maximum
Level 1 Variable					
CAR	928	.75	9.48	−45.75	46.16
BRAND–TICKER MATCH	928	.55	.50	.00	1.00
TIE–IN CAMPAIGN	928	.02	.13	.00	1.00
NUMBER OF BRANDS FROM THE SAME COMPANY	928	1.36	.67	1.00	5.00
NUMBER OF APPEARANCES WITH MAIN CHARACTER	928	1.35	2.07	.00	42.00
TURNOVER	928	.01	.01	.00	.24
NYSE	928	.89	.32	.00	1.00
NASDAQ	928	.11	.31	.00	1.00
LN (ADJUSTED MARKET CAP)	928	23.51	1.80	14.37	26.92
BRAND CLUSTERING	928	1.53	.91	1.00	6.00
OVERALL CLUSTERING	928	18.20	14.29	1.00	62.00
BRAND FAMILIARITY	928	1.77	.85	.00	4.54
PLACEMENT INTENSITY	928	.00	.00	.00	.06
Level 2 Variable					
YEAR	159	2001.52	7.29	1968.00	2007.00
YEAR^2	159	4,006,143.00	29,034.10	3,873,024.00	4,028,049.00
IMDB USER RATING	159	7.02	.98	2.40	8.80
TOTAL PLACEMENTS IN FILM	159	5.84	5.08	1.00	41.00
COMEDY	159	.30	.46	.00	1.00
CRIME	159	.16	.37	.00	1.00
ROMANCE	159	.13	.34	.00	1.00
DRAMA	159	.54	.50	.00	1.00
ACTION	159	.19	.40	.00	1.00
HORROR	159	.05	.22	.00	1.00
SCIFI	159	.09	.28	.00	1.00
THRILLER	159	.22	.42	.00	1.00
R-RATING	159	.47	.50	.00	1.00
ECONOMIC CONTRACTION	159	.06	.24	.00	1.00
STAR NEXT	159	.47	.50	.00	1.00
CRITICS	159	67.74	18.57	17.00	98.00
LN (ADJUSTED BUDGET)	159	15.40	1.12	11.07	17.29
LN (ADJUSTED FIRST-WEEK GROSS)	159	15.49	2.20	8.54	18.63

All nondummy variables are mean centered. We used a full maximum likelihood approach (as Raudenbush 1993 outlines) to estimate the mixed model that combines both levels with the specified cross-level interactions (see the Appendix).

Discussion of Findings

Event Study Results

Figure 2 presents the CAR results. They reveal a gradual stock price buildup that begins approximately ten days before the movie release and continues for approximately three business weeks (i.e., 16 days) after the release date, followed by price stabilization. Over the price buildup period (i.e., the [−10, 16] event window), the stocks gain .75% on average (see Table 6). The returns to product placements in the movies are positive and significant. Therefore, H_1 is supported.

In addition to CARs, Figure 2 presents event window results for the top four industries represented in our sample. Although there is some noise due to reduced sample size, there is a clear pattern of positive abnormal returns in our event window. There is variation in the magnitude of CARs across industries (from .26% for media and entertainment to 1.56% for electronics); however, the overall pattern of CARs is consistent. All four industries experience positive abnormal returns during the event window.

In line with recent marketing research, the documented price pattern (Figure 2) suggests that investors' new information processing takes time; delayed stock market response to marketing-related information may be a more common phenomenon than previously believed (Kimbrough and McAlister 2009; Srinivasan and Hanssens 2009). For example, Pauwels et al. (2004) find that it takes six weeks in the automobile sector to absorb new product introductions. This finding is also consistent with traditional finance literature that notes that it takes time for the information to be fully reflected in stock prices (Kyle 1985).

Although stock prices can be driven by informed trading, they can also be affected by uninformed noise trading. If the latter is the case, stock price reaction would only be temporary, and the change in stock prices would not be a good measure of the value of product placement. Figure 2 indicates that when prices peak three business weeks after the event date, they stay on a new level for at least three more weeks. We also note the potential presence of noise trading, which results in a minor price adjustment in the

TABLE 6
CARs and Significance Tests for Fama–French-Momentum Time-Series Model, Equally Weighted Index, GARCH (1, 1) Estimation

Days	N	Mean CAR	Positive· Negative	Portfolio CDA t	Cross-Sectional Error t	Generalized Sign Z
(–2, 0)	928	04%	452 476	266	325	– 006
(–10, +16)	928	75%	498 430**	1 867*	2 404**	3 015**
(+17, +30)	928	– 29%	439 489	–1 369	–1 628	– 860

*$p < 05$
**$p < 01$
Notes CDA = crude dependence adjustment

post event window However, when we examine (17, 30) event window, the CARs are not significant, indicating that there is no noticeable price drift in the longer run This supports H_2 and our position that the observed price changes indicate the informed nature of the revised estimates of a company's value around the event

Multilevel Mixed Coefficient Model Results

The HLM results indicate significant differences in CARs for brands placed in different films The variance component associated with the random film effect is significant ($p <$ 01) The fixed effects component of the model produces a significant, positive coefficient for the YEAR and a significant, negative coefficient for the YEAR^2 variable This longitudinal pattern of abnormal returns provides support for H_3, indicating a curvilinear, inverted U-shaped relationship between time and CAR We estimate that the effectiveness of product placement peaked in the late 1980s (i e , 1988) and has been declining since then[3] Additional analysis reveals that the mean market response to placements from the 2005–2007 time frame is actually negative (i e , – 014%) and significantly different ($p =$ 01) from the 1 4% response associated with the rest of the sample These results indicate that product placement may now be overstaying its welcome The medium that was once considered new, fresh, and capable of sliding under the radar of the average consumer at present may create "a healthy dose of resentment for its commercial intrusion into entertainment that [the consumer] has already paid for" (Yglesias 2009) Alternatively, or in conjunction, the decline in return over time during the later time periods could also be potentially explained by the soaring costs of placements[4] Detailed examination of the efficacy of recent product placements seems warranted to justify continued adoption of this marketing practice

We find a similar return trajectory for tie-in campaigns The economic worth of those campaigns seems to have peaked in 2000, suggesting that this relatively new tactic may also have gone through the prime of its economic worth Even though the coefficient associated with tie-in campaigns (intercept) is negative ($p <$ 05), we must also consider the time-related interactions related to tie-ins The model coefficient for YEAR interaction is positive and significant, and the coefficient for YEAR^2 is negative and significant The combination of these coefficients results in an inverted U-shaped relationship Therefore, H_4 is also supported

Other Significant Findings

The variable (NUMBER OF APPEARANCES WITH MAIN CHARACTER) has a significant negative coefficient (An alternative measure of overtness using time on screen with the main character generated qualitatively the same results) There is anecdotal evidence suggesting that blatant product placements can be detrimental For example, FedEx drew criticism for the relentless abundance of FedEx references in the movie *Cast Away* (2000) (Friedman 2004) Our result is consistent with the literature that suggests that "in your face," overt placements may not be as effective as their more subtle counterparts

Table 7 presents the complete results for the mixed-coefficient model The coefficient of the BRAND TICKER MATCH variable is marginally significant and positive, which implies that part of the stock price movement may be attributable to the involvement of naive individual traders[5] This finding does not persist during the validation check on a subsample of the data corresponding to the later time period (for a detailed discussion, see the "Robustness Tests" section), indicating that that naive traders may have gotten better at identifying parent companies over time This is plausible because finance portals are making increasingly sophisticated search tools available to individual investors Even if naive investors drive some of the response, their involvement does not undermine the support found for H_2 Moreover, the presence of uninformed trading may actually

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[3] We mean-centered time-related variables The coefficients for YEAR and YEAR^2 are 56 81 and – 0143, respectively Therefore, the following function needs to be maximized $56\ 81 \times (X - \overline{X}) \times - 0143 \times (X^2 - \overline{X^2})$ First-order conditions indicate that the function is maximized when X = 1987 82, or roughly in 1988

[4] The investors may also have gotten better at anticipating the impact of product placements, and their expectations may already be priced in the stock valuations during later periods A simple check conducted by splitting the sample into time-related categories and extending the event window revealed that this is not likely to be the case Similarly, Wiles and Danielova (2009) find no evidence that preannounced placements generated lower returns than regular placements Indeed, preannounced placements were associated with higher returns in their sample

[5] Conceivably, the stock prices of diversified conglomerates are not affected as much as the stock prices of smaller companies (whose brand ticker matches tend to be greater) However, the first explanation seems more plausible because controlling for diversification does not change this finding

TABLE 7
HLM Results for Fixed Effects and Cross-Level Interactions

Fixed Effect	Coefficient	Estimates	SE	T-statistic	*p*-Value
INTERCEPT	θ_0	–2 678	5 046	– 531	595
BRAND–TICKER MATCH	θ_1	**1 1770**	**.696**	**1.691**	**.091**
TIE-IN CAMPAIGN	θ_2	**–14.60705**	**6 579**	**–2.220**	**027**
NUMBER OF BRANDS FROM SAME COMPANY	θ_3	– 31327	512	– 611	541
NUMBER OF APPEARENCES WITH MAIN CHARACTER	θ_4	**– 42066**	**172**	**–2.441**	**.015**
TURNOVER	θ_5	245953	333	738	461
NYSE	θ_6	3 82948	3 835	999	319
NASDAQ	θ_7	3 94559	3 991	989	324
LN (ADJUSTED MARKET CAP)	θ_8	09953	157	633	527
BRAND CLUSTERING	θ_9	– 3989	370	–1 076	283
OVERALL CLUSTERING	θ_{10}	0320	042	758	449
BRAND FAMILIARITY	θ_{11}	–31 808	81 358	– 391	696
BRAND PLACEMENT INTENSITY	θ_{12}	3 8295	3 835	999	319
YEAR	γ_{01}	**56.812**	**23.604**	**2 407**	**.016**
YEAR SQUARED	γ_{02}	**–.0143**	**.006**	**–2 410**	**.016**
IMDB USER RATING	γ_{03}	4813	685	703	482
TOTAL PLACEMENTS IN FILM	γ_{04}	0279	073	380	704
COMEDY	γ_{05}	0137	1 100	012	990
CRIME	γ_{06}	4279	1 041	411	681
ROMANCE	γ_{07}	**–3 7764**	**1.174**	**–3.217**	**.002**
DRAMA	γ_{08}	**–1.6223**	**.873**	**–1.858**	**.063**
ACTION	γ_{09}	5220	1 300	402	687
HORROR	γ_{010}	–3 2309	2 436	–1 326	185
SCIFI	γ_{011}	–1 1287	1 593	– 709	479
THRILLER	γ_{012}	–1 8059	1 155	–1 564	118
R-RATING	γ_{013}	7506	921	815	415
ECONOMIC CONTRACTION	γ_{014}	– 9145	1 672	– 547	584
STAR NEXT	γ_{015}	– 1709	853	– 200	842
CRITICS	γ_{016}	**– 0583**	**.033**	**–1.762**	**.078**
LN (ADJUSTED BUDGET)	γ_{017}	– 2212	489	– 452	651
LN (ADJUSTED FIRST-WEEK GROSS)	γ_{018}	0149	222	067	947
(YEAR) × (TIE-IN CAMPAIGN)$_{ij}$	γ_{21}	**1754 614**	**671.336**	**2.614**	**.009**
(YEAR^2)$_j$ × (TIE-IN CAMPAIGN)$_{ij}$	γ_{22}	**–.438623**	**.168**	**–2.614**	**.009**
(STAR_NEXT)$_j$(TIE-IN CAMPAIGN)$_{ij}$	γ_{23}	7 355332	6 530	1 126	261

Random Effect	Coefficient	SD	Variance Component	χ^2	*p*-Value
Movie	b_{00}	1 71	2 94	190 44	003
Industry	c_{00}	69	48	31 52	000

Notes Results significant at 90% level and higher are in bold

attract informed traders (Kyle 1985) In turn, informed trading facilitates permanent market price adjustment to the new information, which we observe in our sample (i e , prices do not retreat to preplacement levels)

Differences Across Movies and Industries

The results indicate that our sample has significant movie and industry specific heterogeneity ($p <$ 01) The implication is that picking appropriate films for placement is a relevant managerial concern Further examination of the industry-related random effects revealed additional dynamics associated with industry differences[6] We analyzed empirical Bayes (EB) residuals associated with random industry coefficients in our mixed effects model, which are indicative of the size of the random effects associated with individual industries (Raudenbush and Bryk 2002) Figure 4 presents the sizes of EB residuals compared with posterior variance of the estimates

Two industries are characterized by large positive residuals and low posterior variance electronics and automotive placements enjoy 8% and 2% higher returns, respectively, when compared with other placements At the same time, other popular placements, such as those for soft and alcoholic drinks, media and entertainment, and food processing, do not enjoy similar advantages Alcoholic beverages lag almost half a percentage point behind average placements Although it is possible that some of the alcohol-related placements do not present the product in a positive light, the examination of our sample offers another explanation The vast majority of placements are for inexpensive domestic

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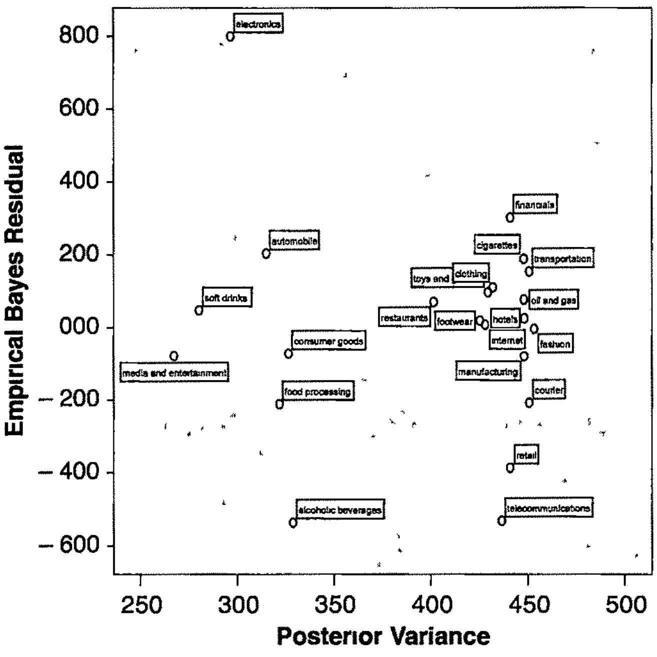
[6] In addition to examining random industry effects, we incorporated various industry classification schemes into our analysis For example, we examined delineation of products along the consumer–industrial goods continuum and introduced fixed effects for convenience, shopping, specialty, and unsought product categories These additional analyses did not produce any significant findings

FIGURE 4
Empirical Bayes Residuals by Industry



beer, a relatively mundane product category We also note that, across the board, the "unexciting" product categories (e g , food processing, telecom, retail, which captures retail "super-chains" and large box stores) have lower returns

Our results also indicate that placements in movies with higher critical scores may be associated with lower CARs In addition, drama placements are associated with marginally lower abnormal returns, while romance placements are associated with significantly lower CARs These findings suggest that movies that require deep emotional involvement on the viewer's part and/or heavily rely on story lines and convincing character portrayal may not be good candidates for product placements In such environments, placements could be viewed as disruptive or risky or may be simply overlooked because of their incongruence with the films

Resonance between advertisement-induced emotions and consumers' incidental emotions facilitates message processing (Petty and Wegener 1998) Drama and romance movies may provoke emotional states that are incongruent with emotional states provoked by placements for cars, soft drinks, and other commonly placed categories Another explanation for the lack of success for placements in these genres is emotional and cognitive overload Dramas are usually more cognitively demanding, and romance films tend to send the viewers on an emotional roller coaster, leaving little room for processing secondary information Furthermore, overload of negative emotions may drive people to shut down and avoid processing the message (Agrawal, Menon, and Aaker 2007)

Robustness Checks

We performed numerous robustness checks to reinforce the validity of our findings First, we alternated the model specification used to estimate the dependent variable for our mixed-coefficient model We used market and three- and four-factor market models and alternative estimation procedures (GARCH and ordinary least squares) to compute CARs in our event study All the models and estimation procedures produced similar results

We also examined the robustness of our HLM model First, we employed the jackknifing procedure and made predictions for every observation while leaving that observation out of the estimation procedure Next, we observed the correlation of these predictions and actual CARs, the correlation of 35 was significant ($p <$ 001) We also followed Cooil, Winer, and Rados (1987) and calculated the cross-validatory (or predictive) R-square for the model, which is equal to 12 These estimates suggest modest predictive power but compare favorably against extant stock market return-based marketing studies (e g , Sood and Tellis 2009, Sorescu, Shankar, and Kushwah 2007)

Next, we examined CARs in different industries and within individual brands to determine whether our generalizations regarding the curvilinear trends hold in individual brands and product categories Specifically, we observed the top four product categories and the three most frequently placed brands (in categories in which we had enough data to examine trends) We found evidence of an inverted U-shaped relationship between CARs and time for each of the three most frequently placed brands (Coca-Cola, PepsiCo, and General Motors) In all three cases, the quadratic trend line produced the best fit with the quadratic terms that have a negative coefficient (R-square ranged from 03 to 19) We also examined individual industries with the largest number of placements and again found evidence of an inverted U-shaped relationship (see Table 8)

We also used our conceptual framework to consider alternative explanations for the existence of time-related effects In particular, we considered degree of company diversification (for estimation details, see Comment and Jarrell 1995) and intensity of analyst coverage, measured by the average number of analysts covering a particular stock in a given calendar year The resulting model (unreported) revealed insignificant coefficients for these control variables

We also examined market response to three movie groups (small, average, and blockbuster films) by conducting separate event studies for three tertiles based on adjusted opening week movie revenue (Tertiles based on total gross revenue results provided qualitatively the same

TABLE 8
Trends Within Individual Brands and Industries

Industry	N	R^2 Linear Trend	R^2 Quadratic Trend (Sign of Squared Coefficient)	Approximate Peak
Media and entertainment	144	000	04 (–)	1995
Soft drinks	124	000	05 (–)	1992
Electronics	109	000	04 (–)	1993
Automobiles	91	001	01 (–)	1995

results) We used case ranking procedure to divide the data set into the three groups (i e , low, average, and high tertiles) The average opening week figures (expressed in 2006 dollars) for the three groups were $2 6 million, $15 6 million, and $44 3 million, respectively Our top tertile is similar to the sample of Wiles and Danilova (2009), who report average opening revenue of $44 8 million for their entire sample (see Table 9)

Figure 5 presents the dynamics of the prices around the movie release date separately for the three groups of movies The significant price increases for the high-grossing films start 30 trading days before the release of the film, with most of the CARs taking place before Day 4, then, a period of insignificant price movements are followed by the downward adjustment The price reaction for the movies with lower box office revenues starts later (right after the release date) but takes less time to complete Prices stabilize on the new level within two weeks The price pattern for the blockbuster films suggest that, while the investors' reaction to the placements in such movies reaches a higher magnitude than the reaction to the lower-grossing films, some of the initial reaction may be driven by uninformed trading and, to that degree, is not indicative of the potential increase in companies' future revenues The earlier prerelease price run-up for high-grossing movies is consistent with this explanation because hype among the noise traders could be driven by the intense prerelease advertising campaigns associated with these high-grossing/high-budget films Nevertheless, the permanent price impact of the placement in high-grossing movies does not seem to be different from that in low-grossing movies

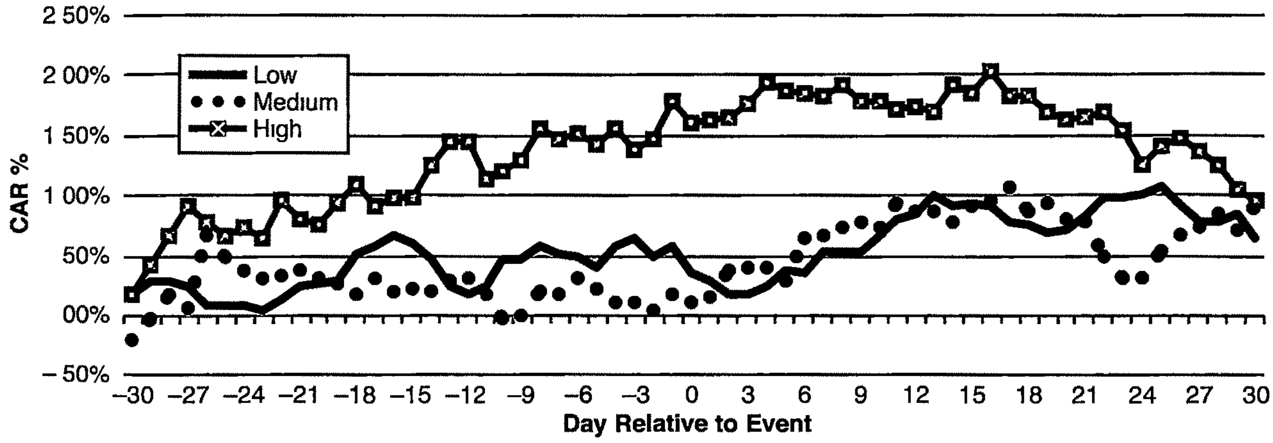
The combined results from this study and that of Wiles and Danielova (2009) indicate that blockbuster films may be associated with higher initial CARs to product placements in films but also with a strong downward adjustment that takes place when the movie opens Blockbuster films may generate more hype, encouraging noise trading However, this increased hype does not lead to an additional sustainable increase in the firm's economic value

Finally, we considered the possibility that longitudinal changes in advertising spending at both film and brand level could influence the relationship between time and placement effectiveness We performed this robustness check with the 1994–2007 subsample by including advertising expenditure across all media for brands and total advertising budget for films (Our source, ACNielsen, began collecting both types of data in 1994) The quadratic curve produced similar estimates to the linear trend (also similar to results for the full sample) [7] The only difference was that CARs fell more slowly than predicted by the original model

TABLE 9
Opening Weekend Gross Tertiles (Based on Rank Order of Cases)

			95% Confidence Interval	
Tertile	M	SE	Lower Bound	Upper Bound
Low (small)	$2,572,293 41	$846,038 98	$911,914 92	$4,232,671 90
Medium (average)	$15,597,485 26	$837,942 73	$13,952,995 92	$17,241,974 59
High (blockbuster)	$44,282,374 72	$852,968 16	$42,608,397 48	$45,956,351 95

FIGURE 5
CARs for Three Opening-Week Gross Revenue Tertiles



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[7] Because the peak in the effectiveness of placements was approximately 1988 (using the full sample), 1994–2007 corresponds to the later part of the life cycle There is a high degree of collinearity between YEAR and YEAR^2 variables during this time period where there is an approximately linear negative relationship between time and CARs (We found a virtually identical negative trend in the CARs during the same period when advertising variables are excluded, so this is not related to their inclusion) Thus, we estimated additional regressions that include only one of the time variables The results for the remaining variables were qualitatively identical for each specification

We also examined the curvilinear trend associated with the effectiveness of tie-in campaigns for the subsample that includes the data on advertising spending. The effectiveness of tie-in campaigns peaked in 2000, so the 1994–2007 subsample period captures both pre- and post-peak data for tie-in campaigns. Consequently, we were able include both YEAR and YEAR^2 variables as predictors of tie-in effectiveness (without collinearity issues), and we observed a curvilinear effect even during this relatively short period of time.

Including both advertising related variables (i.e., movie and brand related advertising spending) did not affect the inverted U-shaped trend or the timing of the peak in the effectiveness of the tie-in campaigns. First-order conditions indicated that the peak in effectiveness of the tie-in campaigns took place in 2000 (as we found in the full data set results). Although inclusion of advertising-related variables did not affect the underlying time related trends, it enriches our understanding of tie-in effectiveness. For example, negative and significant interaction between the tie-ins and brand-level advertising spending suggest that tie-ins are more effective for brands with lower advertising intensity.

In summary, including both movie- and brand-level advertising variables did not seem to affect the declining trend in the CARs attributable to placements. As a side note, previously significant DRAMA and marginally significant (i.e., $p < .10$) BRAND TICKER MATCH variables lost their significance during the subsample time period. This finding is not related to advertising spending information; these variables were not significant regardless of whether the advertising spending data are included in the subsample.

Implications for Managers

Our findings suggest that, just as products go through a life cycle, so too do the instruments used to market them. When a new technique shows promise, innovators and early adopters expand its use and start perfecting its application, which lead to growth and increased effectiveness. In the case of product placement in the movies, it seems this happened before the 1990s. However, as a new marketing technique gains wider acceptance, lack of novelty may diminish its effectiveness and consumers may start showing resistance to persuasion. They turn to consumer advocacy groups (e.g., Media Awareness Network, Commercial Alert) and technologies that enable them to avoid exposure to advertising (e.g., DVR) and even lobby for blanket legislation (e.g., do-not-call lists). Even in the absence of regulatory action, consumers seem to learn to tune out the messages, or they become savvy and impervious to the new type of marketing media. It is also possible that the costs of effective forms of marketing media increase, rendering them less profitable. Regardless of the exact mechanism, our findings indicate the presence of inverted U-shaped relationship over time in the returns for a new marketing practice and reinforce the need for the marketing industry to reinvent itself as new tactics lose their luster. The inverted U-shaped relationship holds true not only for product placements themselves but also for promotional tie-in campaigns used to support them.

DeLorme, Reid, and Zimmer (1994) report negative attitudes toward placements involving overexposed brands. Our results suggest that overexposing the brand within the same film (as measured by the number of appearances with the main character) can be detrimental. Furthermore, we find that tie-in campaigns are less effective for brands with larger advertising budgets. Counterintuitively, lower-intensity, fleeting placements can be more profitable than repetitive and potentially more expensive marquee placements with main characters. This finding is consistent with previous literature that suggests that "visual-only placements, typically the lower-priced placements, are processed by viewers at a low level of cognition and therefore may lead to stronger emotional and purchase intent effects than more elaborate placements that mention the product by name or show the product in use" (Petty and Andrews 2008, p. 15; see also Balasubramanian, Karrh, and Patwardhan 2006). Moreover, romance movies in particular seem to be less suitable for placements. This finding suggests that movies that require deep emotional involvement do not necessarily make the best platforms for placements, because they could be perceived as disruptive.

Previous literature has suggested that too many brand placements can result in less attention devoted to each individual placement (Burke and Srull 1988; Kent and Allen 1993; Webb and Ray 1979) due to clutter (Webb and Ray 1979) and information overload (Malhotra, Jain, and Lagakos 1982). Surprisingly, it seems that this insight from traditional advertising research does not transfer to the product placement arena. We do not find the overall number of placements to be significant in explaining CARs. Perhaps movies that are more suitable for placements attract more placements, potentially masking the underlying relationship. We considered other functional forms representing various types of curvilinear relationships but failed to detect any significant empirical regularity. Therefore, more product placement in a movie does not necessarily affect the value of a given placement in a negative way. Marketers may actually benefit from aligning themselves with a movie with other placements. Given the confirmed importance of selecting the movie for placement, existing placement agreements can signal suitability and serve as qualifiers.

Future Research Directions and Limitations

It is an ongoing challenge for marketers to constantly develop, identify, experiment with, and adopt novel media and techniques to reach and persuade their audiences. Meanwhile, marketers must gauge, decrease, and abandon less effective media activity just to remain competitive. Is it inevitable that all marketing media ultimately succumb to a life cycle (introduction, growth, maturity, and decline), just as products do? To our knowledge, this study represents a first attempt to investigate the longitudinal effectiveness of a successful marketing medium through its life cycle and could be viewed as a building block toward a theory of marketing medium life cycle. We advocate the longitudinal examination of the economic worth of both traditional and emerging media

Extant literature has primarily concentrated on product placements in the movies consistent with Gupta and Gould's (1997) definition However, product placements have found several additional outlets, such as traditional television shows, reality shows, newscasts, video games, music videos, lyrics, catalogs, comic strips, novels, live broadcasts, Internet casting, and even magazine editorials There is a need to develop an integrated definition that incorporates the variety of current and emerging product placement domains and forms It would be of interest to examine the extent to which such alternative placement media registers abnormal returns and whether they are also subject to a curvilinear relationship (i e , life cycle) If so, what would be the expected trajectory of their effectiveness over time? Future studies would also benefit from incorporating various placement-related factors that have been shown to have an impact on advertising effectiveness, such as brand/plot/genre congruity, execution-related factors, and attitude toward sponsor, which we did not explore in this study These factors may explain how some companies manage to achieve success through placements despite life-cycle considerations

Although the data set we used in this study represents a great resource for product placement researchers, it is not without limitations For example, because the data collection was led by film scholars, critically acclaimed and mature content movies were overrepresented in the data set [8] Although most differences are relatively mild, the high critical acclaim of the movies included in the Brand Hype data set may have led to more conservative estimates of the economic worth of product placements because Wiles and Danielova's (2009) and our findings suggest that the placements in such films are associated with lower CARs

Despite the tremendous growth and volume of product placements in recent years, Balasubramanian, Karrh, and Patwardhan (2006) note that only 29% of these placements are paid It seems to be important to examine the antecedents and consequences of barter, gratis, and hybrid forms of product placements to improve the return on investment of this marketing medium and to determine best practices An interesting caveat is that the Federal Communication Commission currently requires the disclosure of paid product placements but does not penalize the omission of such disclosures unless there is a deliberate nonobjective claim or deception related to the product (Petty and Andrews 2008) This means creative room for the interpretation of regulation regarding barter and gratis placements It is likely that nonpaid product placements (which do not have to be disclosed) not only offer greater return on investment but also can be more effective Still, nonpaid placements can come at a cost It is not uncommon for a marketer to pay six-figure fees to product placement agencies for annual service contracts (Wasko 2003) It would be worthwhile to distinguish between paid and nonpaid forms of product placements in further research

Our focus in this study was on assessing the effect of product placement in the movies on the value of the companies that owned the advertised brands An interesting research question is the flip side of this issue What is the impact of product placements on the movie's success? In the context of print advertising, it has been shown that too much advertising relative to editorial content can be detrimental to consumers' perceptions of editorial quality and can have a negative impact on circulation (Ha and Litman 1997) Mandese (2006, p 3) cites industry sources who argue that in the television context, "when consumers grow wary of product placement they may not simply react negatively about the brands involved but may actually turn the shows off" Consistent with the literature on distrust, Wei, Fischer, and Main (2008) find that audience members who recognized a paid placement not only lowered their evaluations of the placed brand but also lowered their evaluations of the hosts, show, and radio station We did not find any evidence of such a relationship in our sample [9] Organically integrated brands in a movie may actually enhance a film's artistic qualities by creating a more realistic setting and providing a connection between the story and the "real world" (DeLorme and Reid 1999, Hirschman and Thompson 1997, Spillman 1989) A more detailed investigation that considers endogeneity between movie quality, placement volume, and placement quality is warranted

This article draws generalizations regarding the effectiveness of product placements over time However, other areas of longitudinal exploration remain to be addressed For example, is there a value in lasting relationships between movie stars and brands? For example, Will Smith seems to have a long-standing relationship with Ray-Ban (e g , *Men in Black* [1997], *Men in Black II* [2002], *Bad Boys II* [2003], *Hancock* [2008]) Do these continuous relationships benefit advertisers by allowing the brand to adhere to the star's persona and capitalize on celebrity appeal, thereby enhancing the realism of the placement? Similar questions could be asked about the enduring relationships between the brands and movie franchises For example, the James Bond franchise has had a long engagement with the Rolex brand since the 1960s, however, starting with *Golden Eye* (1995), the franchise switched to Omega Whether the effective formation and management of such relationships can result in tangible benefits to firms' bottom lines remains to be explored

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[8] More than 16% of the movies received a lead actor/actress nomination, and roughly 17% had won at least one Oscar Approximately one quarter of the movies in our sample had a star or a director who won at least one Academy Award in previous years, compared with just less than 15% reported in the sample Basuroy, Chatterjee, and Ravid (2003) use Similarly, our sample contains movies with relatively high critical scores (65 7) In comparison, the average critics' rating for Wiles and Danielova (2009) was 55 9 on a 100-point scale Approximately one half of the movies in the sample are rated R, which is consistent with the sample De Vany and Walls (2002) examine, however, it includes more PG-13-rated movies (44% compared with 25% industry average) and fewer PG-rated movies (8% versus 20%) The sample does not include any G-rated movies, which traditionally comprise about 3% of all films (De Vany and Walls 2002) Therefore, our sample contains a lower proportion of films geared toward families and children and relatively more movies with mature content We also note that the average production budget of the movies in our sample is roughly $45 million (expressed in 2007 dollars), whereas the average budgets in other studies are somewhat lower (e g , $36 9 million, Elberse and Eliashberg 2003)

[9] We explored whether the number of placements influences the drop-off rates for individual films To this end, we fitted an exponential decay function to movies' weekly revenue streams The function was specified as follows $\text{Revenue}(t) = \text{Revenue}_{\text{open}}\, e^{kt}$, where the negative k coefficient signifies the speed of revenue decay The higher (less negative) the coefficient, the slower is the decay Correlation analysis indicates that although the staying power is significantly positively related to IMDb user rating, critical scores, and the number of weeks the movie stayed in the theaters (correlation coefficients of 46, 48, and 58, respectively, $p <$ 01), there is no relationship between the number of placements in the film and any of the variables indicative of films' success

Appendix
Mixed Model

$$
\begin{aligned}
\text{CAR}_{ijk} = {} & \theta_0 + \theta_1(\text{BRAND–TICKER MATCH})_{ijk} \\
& + \theta_2(\text{TIE-IN CAMPAIGN})_{ijk} \\
& + \theta_3(\text{NUMBER OF OTHER BRANDS FROM} \\
& \quad \text{THE SAME FIRM})_{ijk} \\
& + \theta_4(\text{NUMBER OF APPEARANCES WITH MAIN} \\
& \quad \text{CHARACTER})_{ijk} + \theta_5(\text{TURNOVER})_{ijk} \\
& + \theta_6(\text{NYSE})_{ijk} + \theta_7(\text{NASDAQ})_{ijk} \\
& + \theta_8\ln(\text{MARKET CAPITALIZATION})_{ijk} \\
& + \theta_9(\text{BRAND CLUSTERING})_{ijk} \\
& + \theta_{10}(\text{OVERALL CLUSTERING})_{ijk} \\
& + \theta_{11}(\text{BRAND FAMILIARITY})_{ijk} \\
& + \theta_{12}(\text{PLACEMENT INTENSITY})_{ijk} \\
& + \gamma_{01}(\text{YEAR})_j + \gamma_{02}(\text{YEAR}^2)_j \\
& + \gamma_{03}(\text{IMDB USER RATING})_j \\
& + \gamma_{04}(\text{TOTAL PLACEMENTS})_j + \gamma_{05}(\text{COMEDY})_j \\
& + \gamma_{06}(\text{CRIME})_j + \gamma_{07}(\text{ROMANCE})_j + \gamma_{08}(\text{DRAMA})_j \\
& + \gamma_{09}(\text{ACTION})_j + \gamma_{010}(\text{HORROR})_j + \gamma_{011}(\text{SCIFI})_j \\
& + \gamma_{012}(\text{THRILLER})_j + \gamma_{013}(\text{R-RATING})_j \\
& + \gamma_{014}(\text{ECONOMIC CONTRACTION})_j \\
& + \gamma_{015}(\text{STAR\_NEXT})_j + \gamma_{016}(\text{CRITICS})_j \\
& + \gamma_{017}\ln(\text{ADJUSTED BUDGET})_j \\
& + \gamma_{018}\ln(\text{ADJUSTED FIRST-WEEK GROSS})_j \\
& + \gamma_{21}(\text{YEAR})_j(\text{TIE-IN CAMPAIGN})_{ij} \\
& + \gamma_{22}(\text{YEAR}^2)_j(\text{TIE-IN CAMPAIGN})_{ij} \\
& + \gamma_{23}(\text{STAR\_NEXT})_j(\text{TIE-IN CAMPAIGN})_{ij} \\
& + b_{00j} + c_{00k} + \varepsilon_{ij}
\end{aligned}
$$

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Should Firms Spend More on Research and Development and Advertising During Recessions?

Whenever a recession occurs, there is a heated dialog among marketing academics and practitioners about the appropriate levels of marketing spending. In this article, the authors investigate whether firms should spend more on research and development (R&D) and advertising in recessions. They propose that the effects of changes in firms' R&D and advertising spending in recessions on profits and stock returns are contingent on their market share, financial leverage, and product-market profile (i.e., business-to-consumer goods, business-to-business services, business-to-business goods, or business-to-consumer services). They estimate the model using a panel of more than 10,000 firm-years of publicly listed U.S. firms from 1969 to 2008, during which there were seven recessions. Their results support the contingency approach. The authors compute the marginal effects, which show how the effects of changes in R&D and advertising spending in recessions vary across firms. The marginal effects provide evidence of inadequate spending (e.g., 98% of business-to-consumer goods firms underspend on R&D), proactivity (e.g., 96% of business-to-business services firms are at approximately the right levels on advertising) and excess spending (e.g., 92% of business-to-consumer services firms overspend on advertising). Using the authors' approach and publicly available data, managers can estimate the effects of their firms' and competitors' R&D and advertising spending on profits and stock returns in recessions.

Keywords: recession, advertising, research and development, marketing metrics, profits, stock returns

> There are only two things in a business that make money—innovation and marketing, everything else is cost.
>
> —Peter Drucker (1954)

Recessions are recurring events in major world economies. Although a recession may be triggered by events in a single sector (e.g., the subprime mortgage crisis is purported to have started the most recent recession in the United States), its effects are widespread. Recessions entail a significant contraction in demand for goods and services, lowering sales, cash flows, and profits. Despite the wisdom in Drucker's quote, in recessions, most firms cut franchise-building investments in innovation and marketing to conserve resources (e.g., Ryan 1991). In this study, we investigate how changes in research and development (R&D) and advertising spending in recessions affects firm performance.

We focus on the effects of recessions on firm performance because recessions can lead to permanent realignments in the marketplace (Nishimura, Nakajima, and Kiyota 2005). For example, during the 2001 recession in the United States, more than 20% of the firms in the bottom quartile of performance in their industries rose to the top quartile, and more than 20% in the top quartile fell to the bottom quartile. Moreover, 70% of the firms that increased revenue or profits during the 2001 recession sustained those gains in the ensuing economic recovery, while fewer than 30% of the firms that lost ground regained their positions (Baveja, Postma, and Pritzl 2002).

In recessions, firms are pressed to control costs to maintain liquidity; thus, R&D programs, which may have limited ability to increase short-term cash flow, receive close scrutiny. However, if a firm cuts its R&D spending in recessions, it risks losing its long-term technological advantage. Such dilemmas frequently come to light in the business press. For example, when Kevin Johnson, chief executive officer of Juniper Networks Inc., was pressed to cut costs to survive the 2008 recession, he had to decide what to do about the firm's $800 million research budget, which constituted only 20% of Juniper's revenue but was fuel for its sales growth. He decided against R&D cuts, noting, "We've tightened up on other areas so we can fund more R&D" (Worthen 2009, p. B1). However, not all firms make the same decision, as a report from the Federal Reserve (Barlevy 2005, p. 1) notes, "R&D, one important source of economic growth, falls rather than rises in recessions, even for firms that do not appear to be credit constrained."

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

A similar situation occurs for advertising programs in recessions. While some observers (e.g., Clark 2008) recommend an aggressive approach, consistent with Welch and Welch's (2009, p. 68) comment that "first and foremost, we suggest you resolve to make 2009 a year during which you stay outward-facing and on the offensive," most firms seem to view advertising as a dispensable luxury in recessions (Biel and King 1990). As MBS Blog (2008) notes, "as companies slash advertising in a downturn, they leave empty space in consumers' minds for aggressive marketers to make strong inroads. [Therefore, the recession] provides an unusual opportunity to differentiate yourself and stand out from the crowd, . . . but it takes a lot of courage and convincing to get senior management on board with that."

Studies on advertising effectiveness in a recession report mixed findings (for a review, see Tellis and Tellis 2009). Some (Kamber 2002) report that increasing advertising in recessions increase firms' earnings, while others (Kijewski 1982) report that cutting advertising in recessions does not affect profits. Lamey et al. (2007) report that in recessions, resource-strapped consumers switch disproportionately to low-priced store brands from advertised national brands, lowering the returns to advertising. With respect to R&D spending, Graham and Frankenberger (2008) report that increases in R&D spending in recessions increase firm profits and intangible value. However, they do not consider firm-level contingencies, which may moderate the rewards for R&D spending in recessions.

Focusing on the 2001 recession in the United States, Srinivasan, Lilien, and Rangaswamy (2005) find that a firm's trait they term "marketing proactivity"—viewing the recession as an opportunity and executing a marketing response to capitalize on that opportunity—improves firm performance. However, their research uses a subjective performance measure at a single point in time, raising questions about the generalizability of the findings.

Thus, the findings on the effectiveness of firms' R&D and advertising spending in recessions are mixed, leading to the following research questions. First, all else being equal, what contingent factors moderate the effects of R&D and advertising spending on performance in recessions? Second, taking into account the contingencies, what are the patterns in firms' performance rewards for R&D and advertising spending in recessions, and what can they indicate about when managers should increase their R&D and advertising during recessions?

We use a two-pronged empirical approach to address this study's research questions. First, we build a contingent model of the effects of R&D and advertising spending on firm performance in recessions. We propose that firm-level contingencies (Zeithaml, Varadarajan, and Zeithaml 1988)—that is, the firm's market share (Buzzell and Gale 1987), financial leverage (Jensen and Meckling 1976), and product-market profile (whether it operates in the business-to-business [B2B] or business-to-consumer [B2C] marketplace and whether it offers services or goods)—moderate the effects of R&D and advertising spending in recessions on firm performance. We develop and test hypotheses about the effects of these contingencies on firms' R&D and advertising spending effectiveness in recessions on accounting profit, a contemporaneous performance metric, and stock returns, a forward-looking performance metric. Second, we use the parameter estimates from the contingent model to compute the marginal (i.e., overall) effects of changes in R&D and advertising spending in recessions on firm performance. For example, for each firm, using the marginal effect (negative, positive, or not statistically different from zero) of its R&D and advertising spending in recessions on profits, we assess whether that firm is overspending, underspending, or spending at approximately the right level, respectively. The contingent effects explain why R&D and advertising spending is more or less effective across firms in recessions. If we take into account all the contingent effects, the marginal effects indicate the overall effectiveness of R&D and advertising spending in recessions.

We use a large panel of publicly listed U.S. firms from Standard & Poor's Compustat database, which includes 10,580 firm-years between 1969 and 2008, to model the contingent rewards to R&D and advertising spending in recessions. We use the National Bureau of Economic Research's (NBER) definition of a recession, which yields seven recessions during this period. We employ a modeling approach that accommodates unobserved firm heterogeneity, lagged effects of performance, and serial correlation in errors (Boulding and Staelin 1995).

We find that, all else being equal, in recessions, the greater the firm's market share, the more an increase in R&D spending increases its profits, and the more an increase in advertising spending decreases its profits. However, the greater the firm's financial leverage, the more an increase in advertising spending in recessions increases profits. (We find no comparable effect for R&D spending in recessions.) Focusing on stock returns, the results are similar with respect to market share (i.e., the greater the firm's market share, the more an increase in R&D spending increases its stock returns, and the more an increase in advertising spending decreases its stock returns). In addition, the effects of changes in R&D and advertising spending in recessions on firm performance vary across firms in different product-market profiles.

Using the estimates of the contingent effects, we compute the marginal effects of spending, which generate insights into whether firms are underspending, overspending, or spending at approximately the right levels of R&D and advertising in recessions and nonrecessionary periods. We find that in recessions, while more than half of B2B goods firms have R&D and advertising spending levels that are at approximately the right level (68% and 59% of profit, respectively), 16% and 6% are overspending and 16% and 35% are underspending on R&D and advertising, respectively. In addition, most B2B services firms (96%) have approximately the right advertising levels in recessions. We also find that the stock market rewards B2B goods and B2C services firms for increases in R&D spending in recessions (29% and 42%, respectively) and for increases in B2C services firms' advertising spending in recessions (58%). In some cases (e.g., R&D spending of B2C goods firms, advertising spending of B2B services firms), the stock market either does not reward or punishes firms for such increases in R&D and advertising spending in recessions.

More generally, using our approach and publicly available data, managers can estimate the effects of their firms' and competitors' R&D and advertising spending on profits and stock returns in recessions For completeness, we also compute the marginal effects of advertising and R&D spending on profits and stock returns in nonrecessionary periods

We proceed as follows First, we develop the hypotheses of the contingent effects of firm characteristics on the effects of R&D and advertising spending on firm performance in recessions Then, we describe our empirical research approach and the model specification to test the hypotheses Next, we present the data and measures Following that, we present the results of the contingent and marginal effects and discuss how firms can use our insights and approach to improve the effectiveness of their R&D and advertising spending in recessions We conclude by discussing the study's contributions to managerial practice and marketing theory and identifying its limitations and opportunities for further research

Hypotheses

The contingency theory Zeithaml, Varadarajan, and Zeithaml (1988) propose suggests that the effects of a firm's actions on its performance are moderated by characteristics of both the firm and the marketplace in which the firm operates Our goal is to test for contingencies that have prior theoretical support and for which the data are publicly available to permit testing Thus, we propose that the firm's market share (Buzzell and Gale 1987), which provides market power, and financial leverage (Jensen and Meckling 1976), which constrains its strategic options, moderate the rewards for R&D and advertising spending in recessions

Furthermore, in recessions, consumers' purchasing power declines, and their uncertainty about their future purchasing power increases, leading them to delay and sometimes avoid purchasing products (Goodman 2009) Moreover, customers (consumers and organizations) in different product markets face different purchasing situations in recessions Therefore, we propose that the firm's product-market profile (Schmalensee 1985) moderates the effects of its R&D and advertising spending in recessions on its performance

Two widely used schemes for product-market profiles involve (1) firms in B2B versus firms in B2C markets (Dwyer and Tanner 2008) and (2) firms offering goods versus firms offering services (Parasuraman, Zeithaml, and Berry 1985) Accordingly, we consider four product-market profiles—B2C goods, B2B services, B2B goods, and B2C services—that we expect could differentially influence the effects of R&D and advertising spending in recessions on firm performance Given the limited prior research on the effects of product-market profiles on stock returns, we do not develop formal hypotheses but observe the effects empirically

Moderating Effects of Market Share in Recessions

Market share and R&D in recessions Firms with greater market share may benefit more from R&D spending in recessions than those with lower market share for several reasons Firms with greater market share may not only achieve economies of scale in their R&D programs (Buzzell and Gale 1987) but also have greater market power, enabling them to leverage their R&D outputs effectively in the depressed demand conditions characterizing recessions In recessions, consumers may perceive high-market-share firms as being more likely to survive the recession than low-market-share firms (Pearce and Michael 2006) and thus be more willing to purchase new products (outputs of their increased R&D spending) from them than from their smaller competitors, differentially rewarding the R&D spending of high-market-share firms In addition, given the widespread decline in R&D spending in recessions, the economies of scale of high-market-share firms may enable them to lower the marginal costs of incremental R&D investments, thus leading their R&D spending to be more profitable

With respect to stock returns, investors may also expect the benefits mentioned previously In addition, they may anticipate that the greater market power of high-market-share firms will lead to greater returns from their increased R&D spending during the economic recovery that normally follows the recession Therefore, investors may raise their expectations of the risk-adjusted future cash flows of high-market-share firms investing in R&D in recessions, increasing their stock returns Given these arguments, we propose $H_{1RD}{}^{p}$ and $H_{1RD}{}^{s}$

$H_{1RD}{}^{p}$ During a recession, the profit impact of a firm's R&D spending increases as its market share increases

$H_{1RD}{}^{s}$ During a recession, the stock return impact of a firm's R&D spending increases as its market share increases

Market share and advertising in recessions Firms' advertising programs increase and induce customers to buy products By definition, firms with high market share have high levels of customer awareness and market penetration (Bloom and Kotler 1975) Therefore, increasing such firms' advertising spending in recessions, when customers are reluctant to buy products, may increase the firm's costs without commensurate increases in sales Moreover, in recessions, customers may be averse to changing their buying patterns, making customer acquisition efforts costly In recessions, high-market-share firms, which already serve much of the market, may find customer acquisition even more expensive than low-market-share firms because customers who are willing to switch in recessions may be seeking low-priced products with low profit margins (Anderson and Sullivan 1993) Thus, new customers that high-market-share firms acquire in recessions through increased advertising may be less profitable than their current customers Thus, for high-market-share firms, increasing advertising spending in recessions may decrease profits

With respect to stock returns (in line with the arguments for profits), investors may anticipate that successful customer acquisition efforts of high-market-share firms' increasing advertising in recessions will be unprofitable, decreasing their long-term cash flow expectations and thus lowering stock returns for high-market-share firms Thus, we propose $H_{1AD}{}^{p}$ and $H_{1AD}{}^{s}$

$H_{1AD}{}^p$ During a recession, the profit impact of a firm's advertising spending decreases as its market share increases

$H_{1AD}{}^s$ During a recession, the stock return impact of a firm's advertising spending decreases as its market share increases

Moderating Effects of Financial Leverage in Recessions

Following Jensen and Meckling (1976), we define "financial leverage" as the extent to which a firm uses debt to finance its assets A firm with high financial leverage may be constrained in its ability to acquire funds, increasing its rigidity and limiting its strategic options (Grewal and Tansuhaj 2001) A firm's financial leverage affects its strategy through agency problems with bondholders and shareholders (Myers 1977), therefore, financial leverage is negatively related to both R&D (Ho, Tjahjapranata, and Yap 2006, Long and Malitz 1983) and advertising spending (Grullon and Kanatas 2006, Long and Malitz 1983)

Financial leverage and R&D in recessions When a firm with high financial leverage increases R&D spending (a discretionary item) in a recession, it signals that R&D programs are central to the firm's competitive advantage This suggests that the firm expects that the returns to its R&D spending (i e , from commercially viable products and technologies) will exceed the cost of capital resulting from the higher financial leverage Thus, we expect that firms with high financial leverage that increase R&D spending in recessions will be developing superior new products with well-defined competitive advantage, which should result in high levels of customer acceptance at relatively low cost, increasing their sales and profits

With respect to stock returns, as we noted previously, firms with high financial leverage have cash flow obligations arising from the principal and interest repayments on their debt Thus, when highly leveraged firms make discretionary R&D investments in recessions, investors may infer that the firm has high expectations about its near-term R&D outputs and increase their expectations of the firm's future cash flows Furthermore, because investors cannot easily differentiate between good- and bad-quality firms, they expect good-quality firms to undertake actions that are costly for bad-quality firms (Myers and Majluf 1984) For highly leveraged firms, investing in R&D in a recession is a costly action, considering the risk and uncertainty of outputs from R&D investments (Ho, Tjahjapranata, and Yap 1997, Long and Malitz 1983) Thus, firms that invest in R&D in recessions signal to investors that they are good-quality firms increasing the security for their lenders, lowering their cost of capital, and increasing investors' expectations of future risk-adjusted cash flows, leading to increases in stock returns Thus, we propose $H_{2RD}{}^p$ and $H_{2RD}{}^s$

$H_{2RD}{}^p$ During a recession, the profit impact of a firm's R&D spending increases as its financial leverage increases

$H_{2RD}{}^s$ During a recession, the stock return impact of a firm's R&D spending increases as its financial leverage increases

Financial leverage and advertising in recessions When a firm has a high level of financial leverage, it usually decreases its advertising spending, a discretionary item (Grullon and Kanatas 2006, Long and Malitz 1983) Thus, when a highly leveraged firm increases its advertising spending during recessions, it is clearly prioritizing its advertising program That increase suggests that it has something special to communicate about its products to differentiate it from its competitors in the marketplace during difficult economic times, leading to a greater increase in sales and profits for its advertising spending in recessions

The preceding arguments apply for stock returns as well In addition, the arguments for the signaling effects of financial leverage (to the investors) for R&D spending in recessions are relevant here Because advertising spending is discretionary, increased advertising spending in recessions should signal the superior quality of the leveraged firm to investors, increasing stock returns Thus, we propose $H_{2AD}{}^p$ and $H_{2AD}{}^s$

$H_{2AD}{}^p$ During a recession, the profit impact of a firm's advertising spending increases as its financial leverage increases

$H_{2AD}{}^s$ During a recession, the stock return impact of a firm's advertising spending increases as its financial leverage increases

Moderating Effects of Product-Market Profile

As we discussed previously, we expect the effects of firms' R&D and advertising spending in recessions on profits to differ depending on their product-market profiles—B2C goods, B2B services, B2B goods, and B2C services firms Given the limited prior research, we do not develop formal hypotheses with respect to the effects of product-market profiles on stock returns here, but we observe the effects empirically

We consider these effects on a relative basis and formulate our hypotheses using B2C services firms as the baseline category For ease of exposition, we develop the hypotheses pertaining to R&D spending (and advertising spending) in recessions of firms in the different product-market profiles compared with B2C services firms in the following sequence (1) B2C goods firms (different in terms of goods vs services from B2C services firms), (2) B2B services firms (different in terms of B2B vs B2C from B2C services firms), and (3) B2B goods firms (different in terms of B2B vs B2C and goods vs services from B2C services firms)

R&D spending in recessions B2C goods firms versus B2C services firms The intangibility of services may lead to faster dissipation of innovation rents from new services than from new goods because low-cost competitors can cost-effectively imitate new services (Song, Di Benedetto, and Zhao 1999, Tufano 1989) In recessions, the dissipation levels in innovation rents of services, compared with those of goods, may be even lower when the overall demand for services is reduced (Rampell 2009) Therefore, R&D spending in recessions will increase profits more in B2C goods firms' than in B2C services firms Thus, we propose $H_{3RD}{}^p$

H_{3RD}^{p}: During a recession, the profit impact of R&D spending for a B2C goods firm is greater than that for a B2C services firm.

Advertising spending in recessions: B2C goods firms versus B2C services firms. Consumption and happiness studies show that consumers are happier when they spend money on experiences (i.e., services) rather than on goods (e.g., Nicolao, Irwin, and Goodman 2009). There is some evidence that, in recessions, consumers' preference for services over goods may be even stronger, especially when advertisers can tap into the experiential aspect of service consumption (Rosenbloom 2010). In addition, recessions cause consumers to forgo or delay buying products (Lamey et al. 2007). Specifically, consumers tend to delay purchasing tangible goods (whose purchase may induce feelings of guilt) more than intangible services (Danziger 2004). The arguments here suggest that during recessions, increases in advertising of B2C goods firms may decrease profits compared with B2C services firms. Therefore, we propose H_{3AD}^{p}:

H_{3AD}^{p}: During a recession, the profit impact of advertising spending for a B2C goods firm is less than that for a B2C services firm.

R&D spending in recessions: B2B services firms versus B2C services firms. With respect to R&D and nature of the marketplace (B2B versus B2C) in recessions, cash-strapped consumers may reduce purchases of newly developed services, whereas business customers may be unable to reduce purchases of new services that are crucial for their organization's operations (NPD Group 2010). Also, given the rational nature of B2B customers, new products emerging from B2B service firms' R&D efforts may find superior acceptance in recessions, leading to greater increases in sales and profits than for B2C service firms. Therefore, during recessions, the profit impact of increases in R&D spending of B2B services firms is greater than for B2C services firms. Thus, we propose H_{4RD}^{p}:

H_{4RD}^{p}: During a recession, the profit impact of R&D spending for a B2B services firm is greater than that for a B2C services firm.

Advertising spending in recessions: B2B services firms versus B2C services firms. In general, B2B firms (whose customers are other firms) spend much less on advertising as a percentage of sales than B2C firms (roughly a 1:10 ratio; Schonfeld & Associates 2010), and their customers are more sensitive to changes in downstream consumer demand (inevitable during recessions) than to changes in supplier advertising. Therefore, during a recession, increases in advertising by B2B firms, compared with that by B2C firms, may increase advertising costs without commensurate increases in sales, lowering profits. Thus, we propose H_{4AD}^{p}:

H_{4AD}^{p}: During a recession, the profit impact of advertising spending for a B2B services firm is less than that for a B2C services firm.

R&D spending in recessions: B2B goods firms versus B2C services firms. As we discussed previously, we anticipate that increases in B2B firms' R&D spending in recessions will yield greater profits than increases in B2C firms' R&D spending and that increases in goods firms' R&D spending in recessions will yield higher profits. Thus, we propose H_{5RD}^{p}:

H_{5RD}^{p}: During a recession, the profit impact of R&D spending for a B2B goods firm is greater than that for a B2C services firm.

Advertising spending: B2B goods firms versus B2C services firms. As we discussed previously, we anticipate that during recessions, increases in B2B firms' advertising spending yield lower profits than increases in B2C firms' advertising spending, and increases in goods firms' advertising spending in recessions yield lower profits than increases in services firms' advertising spending. Integrating these effects, we propose H_{5AD}^{p}:

H_{5AD}^{p}: During a recession, the profit impact of advertising spending for a B2B goods firm is less than the impact for a B2C services firm.

Method

Research Approach

We use a two-pronged research approach to answer our research questions. First, we build a contingent model of the effects of R&D and advertising spending on firm performance in recessions. Then, we empirically test whether, all else being equal, an increase in a contingent factor (e.g., market share) in a recession significantly changes the effects of R&D and advertising spending on firm performance (e.g., profits, stock returns). Following that, we use the estimates of all the contingent effects to compute the marginal effects (i.e., total effects) of R&D and advertising spending on firm performance in recessions. For each firm, according to the marginal effects (negative, positive, or not statistically different from zero) of R&D and advertising spending on its profits, we assess whether the firm is overspending, underspending, or spending at approximately the right level in recessions, respectively. Likewise, we assess whether an increase in the firm's R&D and advertising spending in recessions increases or decreases stock returns. We explain our research approach with an illustration.

Let Y represent a performance metric of interest to a firm (e.g., profit) that is affected by spending X (e.g., advertising) in a recession (captured by a dummy term Recession [1 if it is a recession year and 0 if not]). The relationship between X and Y for a firm can be specified as follows[1]:

$$Y = \omega_0 + \omega_1 X + \omega_2 \text{Recession} \times X + \omega_3 \text{Recession} \tag{1}$$

In Equation 1, ω_1 and ω_2 capture the effects of X on Y in recessions and nonrecessionary periods, respectively. We capture the main effect of the recession on Y through ω_3. We assume that the relationship between X and Y (in recessions and in nonrecessionary periods) is influenced by a contingency Z_1 (e.g., market share). Consistent with our theoretical approach, in turn, let ω_1 and ω_2 be affected by Z_1. Thus, we augment Equation 1 to include the following:

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[1] We have suppressed trend terms, other firm characteristics, and error terms for clarity of exposition. In our estimation, to allow for complete model specification, we also allow Z_1 to directly affect Y, which we have also suppressed in Equation 2.

$$\omega_1 = \psi_{01} + \psi_{11}Z_1, \text{ and} \tag{2a}$$

$$\omega_2 = \psi_{02} + \psi_{12}Z_1 \tag{2b}$$

Incorporating Equations 2a and 2b into Equation 1 while controlling for the main effect of Z_1 on Y (through ω_4) yields

$$Y = \omega_0 + (\psi_{01} + \psi_{11}Z_1) \times X + (\psi_{02} + \psi_{12}Z_1) \times \text{Recession} \times X + \omega_3\text{Recession} + \omega_4 Z_1 \tag{3}$$

From Equation 3, we note that the marginal effect of X on Y (i.e., what happens to Y when X changes) is

$$dY/dX = (\psi_{01} + \psi_{11}Z_1) + (\psi_{02} + \psi_{12}Z_1) \times \text{Recession} \tag{4}$$

The marginal effect of X on Y measures the effectiveness of changes in X with respect to Y, taking both Z_1 and the recession into account. In nonrecessionary periods (Recession = 0), two terms $(\psi_{01} + \psi_{11}Z_1)$ constitute the marginal effect of X, and in recessions (Recession = 1), four terms $(\psi_{01} + \psi_{11}Z_1) + (\psi_{02} + \psi_{12}Z_1)$ constitute the marginal effect. This approach enables us to calculate the marginal effects of changes in R&D and advertising spending in recessions on profits (and stock returns), taking all contingencies into account.[2] Thus, for example, $dY/dX > 0$ (when Y is profit) implies that a firm is underspending on X.

Therefore, contingent effects identify conditions (i.e., the effect of Z_1, recession, or both) when marketing spending (X) should be increased or decreased. We denote ψ_{01}, ψ_{11}, ψ_{02}, and ψ_{12} as the constituent contingent effects of Z_1 on the $X - Y$ relationship, which are essential for computing the marginal effect. Thus, the sign of the marginal effect (e.g., of advertising spending in recessions by B2B goods firms on profit) may be different from one of its constituent contingent effects.

From a theory-building perspective, the coefficient ψ_{12} (the three-way interaction) assesses how Z_1 influences the $X - Y$ relationship beyond nonrecessionary periods (captured through ψ_{11} in the model). For example, a negative sign of ψ_{12} (as hypothesized in H_{1AD^P}) suggests that an increase in a firm's market share (Z_1) decreases the effect of advertising spending (X) on profit (Y) in a recession.

Note that although the marginal effects measure the effectiveness of changes in marketing spending, which is relevant for managerial practice, the constituent contingent effects are not by themselves directly managerially meaningful. However, these contingent effects (three-way interactions) are useful to extend theoretical understanding of what drives the rewards to changes in R&D and advertising spending.

Model Specification

Our goal is to find a model formulation that captures the main effects of firms' R&D and advertising spending and their interactions with other firm and market characteristics and the occurrence of recessions on performance. We adapt the approach Boulding and Staelin (1995) propose to relate firms' R&D and advertising spending in recessions to their performance, contingent on firm and market characteristics. After appropriate log-transformation and first differencing, the Boulding and Staelin approach permits ordinary least squares estimation of the model and incorporates the effect of lagged performance and lagged spending, which are relevant to our setting. We begin with the following general equations, which express firm profits Y^p_{it} (stock returns Y^s_{it}) as a function of R&D and advertising spending[3]:

$$Y^p_{it} = RD_{it}^{\beta^p_{it}} AD_{it}^{\theta^p_{it}} SIZE_{it-1}^{\gamma^p_1} MKTSHR_{it-1}^{\gamma^p_2} LEV_{it-1}^{\gamma^p_3} \left(\prod_{k=1}^{4} \delta_{pk}^{RECTERM_{kt}} \right) e^{\alpha^p_i + \varepsilon^p_{it}}, \tag{5}$$

$$\begin{aligned} \beta^p_{it} = {} & \beta^p_0 + \beta^p_{11}(MKTSHR_{it-1} \times REC_t) + \beta^p_{12}(LEV_{it-1} \times REC_t) \\ & + \beta^p_{13}(B2CGOODS_i \times REC_t) + \beta^p_{14}(B2BSERVICES_i \\ & \times REC_t) + \beta^p_{15}(B2BGOODS_i \times REC_t) + \beta^p_{16}REC_t \\ & + \beta^p_{17}MKTSHR_{it-1} + \beta^p_{18}LEV_{it-1} + \beta^p_{19}B2CGOODS_i \\ & + \beta^p_{20}B2BSERVICES_i + \beta^p_{21}B2BGOODS_i, \end{aligned} \tag{6}$$

$$\begin{aligned} \theta^p_{it} = {} & \theta^p_0 + \theta^p_{11}(MKTSHR_{it-1} \times REC_t) + \theta^p_{12}(LEV_{it-1} \times REC_t) \\ & + \theta^p_{13}(B2CGOODS_i \times REC_t) + \theta^p_{14}(B2BSERVICES_i \\ & \times REC_t) + \theta^p_{15}(B2BGOODS_i \times REC_t) + \theta^p_{16}REC_t \\ & + \theta^p_{17}MKTSHR_{it-1} + \theta^p_{18}LEV_{it-1} + \theta^p_{19}B2CGOODS_i \\ & + \theta^p_{20}B2BSERVICES_i + \theta^p_{21}B2BGOODS_i, \text{ and} \end{aligned} \tag{7}$$

$$\varepsilon^p_{it} = \rho\varepsilon^p_{it-1} + \mu^p_{it}, \tag{8}$$

where

RD_{it} = R&D spending of firm i in time period t,
AD_{it} = advertising spending of firm i in time period t,
$SIZE_{it-1}$ = size of firm i at time t − 1 (lagged by a year), which incorporates the idea of economies of scale in firm productivity,
$MKTSHR_{it-1}$ = market share of firm i at time t − 1 (lagged by a year),
LEV_{it-1} = financial leverage of firm i at time t − 1 (lagged by a year),
REC_t = 1 if year is a recession year, and 0 if otherwise,
$B2CGOODS_i$ = 1 if firm i's product-market profile is B2C goods, and 0 if otherwise,

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[2] We thank an anonymous reviewer for useful suggestions on the development of this section.

[3] We employ a similar formulation to express firm stock returns as a function of R&D and advertising spending, with the corresponding coefficients denoted with a superscript "s."

B2BSERVICES$_i$ = 1 if firm i's product-market profile is B2B services, and 0 if otherwise,

B2BGOODS$_i$ = 1 if firm i's product-market profile is B2B goods, and 0 if otherwise,

β_0^p, θ_0^p = the coefficients capturing the main effect of firm's R&D spending and advertising in nonrecessionary periods, respectively,

γ_1^p, γ_2^p, γ_3^p = the coefficients capturing the main effects of firm size, market share, and financial leverage,

δ_{pk} = (k = 1 to 4) the coefficients capturing the main effect of recession (k = 1) and the interaction effects of recession and product-market profiles B2C goods (k = 2), B2B services (k = 3), and B2B goods (k = 4), respectively The coefficients are estimated through the definition of the variables RECTERM$_{kt}$ (k = 1 to 4), where RECTERM$_{1t}$ = REC$_t$, RECTERM$_{2t}$ = REC$_t$ × B2CGOODS$_i$, RECTERM$_{3t}$ = REC$_t$ × B2BSERVICES$_i$, and RECTERM$_{4t}$ = REC$_t$ × B2BGOODS$_i$, respectively,

β_{11}^p, β_{12}^p = the coefficients capturing the three-way interaction effects between the firm's R&D spending in recessions and market share, and firm's R&D spending in recessions and financial leverage, respectively,

β_{13}^p, β_{14}^p, β_{15}^p = the three-way interaction effects between the firm's R&D spending in recessions and whether it is a B2C goods firm (β_{13}^p), a B2B services firm (β_{14}^p), or a B2B goods firm (β_{15}^p),

$\beta_{16}^p - \beta_{21}^p$ = the coefficients capturing two-way interaction effects between the firm's R&D spending and recession (β_{16}^p), market share (β_{17}^p), financial leverage (β_{18}^p), and whether the firm is a B2C goods firm (β_{19}^p), a B2B services firm (β_{20}^p), or a B2B goods firm (β_{21}^p), respectively (we include these two-way interaction terms in the model with three-way interaction effects to ensure the correct interpretation of marginal effects),

θ_{mn}^p = ($1 \leq m \leq 2$, $0 \leq n \leq 9$) the same substantive two- and three-way interaction effects interpretation about the effects of advertising as the corresponding coefficient has for the effects of R&D spending on $Y^p{}_{it}$,

α_i^p = unobserved fixed factors, and

ε_{it}^p includes $\rho\varepsilon_{it-1}$ and μ_{it} autoregressive and random unobserved factors, respectively

The Web Appendix (http //www marketingpower com/jmmay11) provides a detailed specification of the model

Data

We used the Standard & Poor's COMPUSTAT database to collect data on publicly listed U S firms for the period 1969–2008 The final data set with complete information on the lagged variables, necessary for instrumental variable estimation in the model for firm profits in recessions, includes 10,580 firm-years Table 1 provides the distribution of firm-years in the data set across the four product-market profiles, and Table 2 describes the profiles of the firms Next, we describe the measures

We used the National Bureau of Economic Research (NBER) declaration of a recession, which is, in general, the one the media cites and is thus most salient to consumers, and identified seven recession years 1970, 1974, 1980, 1982, 1990, 2001, and 2008 We classified a year as a recession year if the majority of the year occurred during an NBER-classified recessionary trough (Frankenberger and Graham 2003, Graham and Frankenberger 2008) We measured the firm's profit by the return on its assets (i e , earnings before interest, taxes, and depreciation divided by its total assets)[4] We calculated stock returns using monthly stock returns data from the Center for Research in Security Prices using the formula log $[\Pi_{m=1}^{12}(1 + \text{Ret}_{im})]$, where Ret$_{im}$ is the return for the firm i's stock in month m during the year (Mizik and Jacobson 2008) This decreased the sample of firms to 10,580 to 5145 in the stock returns model

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[4] Because the return on assets can be negative, we took the natural logarithm of the firm's return on assets after adding 1 to it and then dropped 60 firm-years, a negligible number in our sample, for which the return on assets was less than –1

TABLE 1
Distribution of Firms by Product-Market

Product Market	Number of Firm-Years	Percentage
B2B goods	7617	72
B2B services	1270	12
B2C goods	1058	10
B2C services	635	6
Total	10,580	100

Notes We used the firm's primary four-digit SIC code to classify firms as B2B goods (e g , chemicals, primary metal), B2B services (e g , business services, engineering, accounting, research, management and related services), B2C goods (e g , food and kindred products, apparel), and B2C services (e g , hotels, travel agents) We excluded the farming sector from the data set

TABLE 2
Profile of Firms

Variable	Mdn	M
Market capitalization ($ million)	129	3,396
Total assets ($ million)	139	3,213
Sales ($ million)	156	2,682
R&D/sales	037	142
Advertising/sales	019	041
Return on assets	050	032
Stock returns	031	076

Notes The descriptive statistics are for the sample of 10,580 observations used for the estimation of the profit model

We obtained data on firms' R&D and advertising from COMPUSTAT[5] The effects of R&D and advertising spending on performance persist beyond the year in which those expenses are incurred (Hirschey and Weygandt 1985) We address this issue in two ways First, we measured R&D (and advertising) spending with a stock measure over five- (three-) year periods with an annual discount rate of 15 (40) We subsequently demonstrate the robustness of our results to an alternative amortization period Second, we use a log first- and ρ-differencing approach to estimation that incorporates the effects of R&D (advertising) spending in current (t), previous (t – 1), and two-year lag (t – 2) to account for previous years' R&D (advertising) spending We measured market share as the firm's total sales divided by the sales of all firms in the firm's primary two-digit Standard Industrial Classification (SIC) code, an approach that produces results consistent with those using finer three- or

TABLE 3
R&D and Advertising in Recessions: Firm Profits and Stock Returns

Effects	**Hypothesized Model** **Profits**	**Hypothesized Model** **Stock Returns**	**Alternative Measure of R&D and Advertising Spending** **Profits**	**Alternative Measure of R&D and Advertising Spending** **Stock Returns**
Effects of Interest (Three-Way Interactions)				
R&D × recession × market share	003 (001)***	001 (000)***	002 (000)***	000 (000)
advertising × recession × market share	– 002 (001)***	– 001 (000)***	– 002 (000)***	– 001 (000)***
R&D × recession × financial leverage	– 002 (003)	– 000 (001)	000 (003)	– 001 (001)
advertising × recession × financial leverage	005 (002)**	– 001 (000)	005 (002)**	– 000 (000)
R&D × recession × B2C goods	035 (015)**	007 (004)*	021 (013)*	005 (004)
advertising × recession × B2C goods	– 044 (020)**	011 (006)**	– 050 (018)***	009 (005)*
R&D × recession × B2B services	069 (014)***	009 (004)**	033 (012)***	006 (003)*
advertising × recession × B2B services	– 055 (020)***	012 (005)**	– 060 (017)***	009 (004)**
R&D × recession × B2B goods	067 (013)***	007 (004)*	036 (011)***	004 (003)
advertising × recession × B2B goods	– 057 (019)***	011 (005)**	– 057 (016)***	008 (002)**
Control Variables				
Recession	– 129 (069)*	– 072 (020)***	– 039 (063)	– 053 (015)***
R&D	126 (041)***	– 007 (015)	081 (035)**	018 (014)
Advertising	031 (036)	006 (011)	– 058 (024)**	– 001 (001)
Market share	– 026 (024)	– 010 (005)*	– 007 (022)	– 007 (005)
Financial leverage	094 (006)***	006 (001)***	081 (005)***	007 (001)***
Firm size	– 056 (024)**	– 009 (005)	– 050 (022)**	– 013 (005)***
Two-Way Interactions				
R&D × recession	– 050 (013)***	– 004 (004)	– 020 (012)*	– 004 (003)
advertising × recession	044 (019)**	– 014 (005)***	046 (016)***	– 010 (004)**
R&D × market share	005 (002)**	000 (001)	010 (002)***	001 (000)*
advertising × market share	001 (002)	– 001 (000)***	001 (001)	– 000 (000)
R&D × financial leverage	008 (003)**	– 000 (001)	004 (003)	– 001 (001)*
advertising × financial leverage	– 010 (002)***	000 (000)	– 011 (002)***	000 (000)
R&D × B2C goods	– 072 (048)	005 (017)	– 007 (039)	– 005 (015)
advertising × B2C goods	– 026 (042)	– 014 (012)	018 (029)	003 (009)
R&D × B2B services	– 080 (041)**	017 (016)	– 007 (033)	– 015 (014)
advertising × B2B services	– 046 (036)	– 016 (011)	058 (023)**	003 (008)
R&D × B2B goods	– 098 (039)**	011 (015)	006 (031)	– 013 (014)
advertising × B2B goods	– 018 (035)	– 016 (011)	059 (022)***	001 (008)
recession × B2C goods	038 (078)	072 (022)***	– 083 (072)	054 (016)***
recession × B2B services	119 (075)	072 (020)***	– 032 (067)	054 (015)***
recession × B2B goods	116 (070)*	078 (020)***	– 011 (063)	051 (015)***
Constant	– 001 (002)	000 (000)	– 003 (002)*	– 000 (000)
Observations	10,580	5145	12,809	5917
R-square	045	053	033	072
Overall F-value (*p*-value)	16 19***	9 31***	14 65***	13 88***

*p< 10
**p< 05
***p< 01
Notes Figures are rounded to the third decimal place In Columns 1 and 2, following Hirschey and Weygandt (1985), we computed R&D and advertising spending as stock measures using five and three years with amortization rates of 15 and 60, respectively In Columns 3 and 4, we computed R&D and advertising spending as stock measures using four and two years for amortization, respectively

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[5] Research and development expenses in COMPUSTAT include company-sponsored R&D, purchased R&D when reported as a special item, expenses from continuing operations (for those engaged in primary business of R&D), and software development expense (COMPUSTAT manual, pp 222–23, see http //www standardandpoors com [accessed on April 15, 2010]) Advertising expenses in COMPUSTAT include the cost of advertising media (radio, television, newspapers, and periodicals) and promotional expenses (COMPUSTAT manual, p 200)

four-digit SIC codes (Clark 1989) We computed financial leverage as the ratio of the firm's long-term debt to its total assets (Jensen and Meckling 1976)

We measured firms' membership in the four product-market profiles according to their primary four-digit SIC codes using the business description that the Occupational Safety and Health Administration provides (Palepu 1985) [6] Finally, we measured the firm's size by its sales lagged by a year, adjusted to constant dollars using the gross domestic product deflator (Boulding and Staelin 1995)

Results: Contingent Effects of R&D and Advertising

We estimated the model in Equation A1 (see the Web Appendix at http //www marketingpower com/jmmay11) using ordinary least squares regression (Boulding and Staelin 1995) We determined the value of ρ (18) using a grid search mechanism that minimized the sum of squared errors We estimated two models, one for profits and another for stock returns, which we discuss in the following subsections [7]

Profits

Table 3, Column 1, presents the results of the model estimation for the firm's profits in recessions [8] Recall that we are interested in testing the hypotheses pertaining to the contingent effects represented by the three-way interaction effects The data fit the model well (F-value = 16 19, $p <$ 01), the R-square is not interpretable for this model (Boulding and Staelin 1995) We test the hypotheses by assessing the statistical significance of the related three-way interaction effects As we hypothesized in H_{1RD}^{p} and H_{1AD}^{p}, respectively, the interaction between R&D spending in recessions and market share on profits is positive ($\beta^{p}_{I1} =$ 003, $p <$ 001) and between advertising spending in recession and market share is negative ($\theta^{p}_{I1} = -002$, $p <$ 01) With respect to the contingent effect of the firm's financial leverage hypothesized in H_{2RD}^{p} and H_{2AD}^{p}, respectively, we find no support for the interaction effect between R&D spending in recessions and financial leverage ($\beta^{p}_{I2} = -002$, not significant [n s]) but find support for the positive interaction effect between advertising spending in recessions and financial leverage ($\theta^{p}_{I2} =$ 005, $p <$ 05)

Next, we discuss the findings with regard to the contingent effect of product-market profiles The interaction effects in Table 3 are the contingent effects of R&D (advertising) spending in recessions on profits (stock returns) of firms in other product-market profiles compared with B2C services firms, the baseline product-market profile and the smallest group of firms in the data set, with no loss of generality As we hypothesized in H_{3RD}^{p} and H_{3AD}^{p}, respectively, for B2C goods firms (compared with B2C services firms), an increase in R&D spending in a recession has a positive effect on profits ($\beta^{p}_{I3} =$ 035, $p <$ 05), while an increase in advertising spending in a recession has a negative effect on profits ($\theta^{p}_{I3} = -044$, $p <$ 05) Furthermore, as we hypothesized in H_{4RD}^{p} and H_{4AD}^{p}, respectively, for B2B services firms (compared with B2C services firms), an increase in R&D spending in a recession has a positive effect on profits ($\beta^{p}_{I4} =$ 069, $p <$ 01), while an increase in advertising spending in a recession has a negative effect on profits ($\theta^{p}_{I4} = -055$, $p <$ 01) Finally, as we hypothesized in H_{5RD}^{p} and H_{5AD}^{p}, respectively, we find that an increase in R&D spending in recessions by B2B goods firms compared with that of B2C services firms has a positive effect on profits ($\beta^{p}_{I5} =$ 067, $p <$ 01) and an increase in advertising spending in a recession has a negative effect on profits ($\theta^{p}_{I5} = -057$, $p <$ 01)

Stock Returns

Table 3, Column 2, presents the results for stock returns Again, the data fit the model well (F = 9 31, $p <$ 01) As we hypothesized in H_{1RD}^{s} and H_{1AD}^{s}, respectively, the interaction effect between R&D spending in recessions and market share on stock returns is positive ($\beta^{s}_{I1} =$ 001, $p <$ 001) and the interaction effect between advertising spending in recessions and market share is negative ($\theta^{s}_{I1} = -001$, $p <$ 001) However, we find no support for H_{2RD}^{s} and H_{2AD}^{s} (respectively, the interaction effects between R&D ($\beta^{s}_{I2} = -000$, n s) and advertising ($\theta^{s}_{I2} = -001$, n s) in recessions and financial leverage on stock returns)

With respect to product-market profiles (for which we did not develop formal hypotheses), the results indicate that during a recession, the effects of increases in R&D spending by B2C goods firms ($\beta^{s}_{I3} =$ 007, $p <$ 10), B2B services firms ($\beta^{s}_{I4} =$ 009, $p <$ 05), and B2B goods firms ($\beta^{s}_{I5} =$ 007, $p <$ 10) on stock returns are greater than B2C services firms Likewise, during a recession, the effects of increases in advertising spending on stock returns are greater for B2C goods firms ($\theta^{s}_{I3} =$ 011, $p <$ 05), B2B services firms ($\theta^{s}_{I4} =$ 012, $p <$ 05), and B2B goods firms ($\theta^{s}_{I5} =$ 011, $p <$ 05) than for B2C services firms

Summary of Contingent Effects Pertaining to Hypotheses

In summary, nine of the ten three-way hypothesized interaction effects ([market share, financial leverage, and product-market profiles] × [R&D × recession, advertising × recession]) in the profits equation and eight of the ten three-way hypothesized interaction effects in the stock returns equations are significant, in support of the contingency-based approach to model the effects of R&D and advertising spending in recessions on firm performance We discuss the theoretical implications of the contingent effects in the "Discussion" section

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[6] Examples of B2B goods are the following four-digit codes 2221 (broadwoven fabric mills) and 2861 (gum and wood chemicals), examples of B2C goods are 2095 (roasted coffee) and 2384 (robes and dressing gowns), examples of B2B services are 2754 (commercial printing, gravure) and 7311 (advertising agencies), and examples of B2C services are 7011 (hotels and motels) and 7241 (barber shops)

[7] We examined the variance inflation factors for the model and found them to be less than ten, suggesting that multicollinearity is unlikely to be a threat to the validity of the results

[8] We examined the potential for survivorship bias by estimating a Heckman sample selection model with the following predictor variables firm size, firm performance, R&D, and advertising spending in a probit model of firm exit We used the inverse Mills lambda from this model and included it in both the profit and stock return models We found no significant effect for the inverse Mills lambda on either profits or stock returns

Robustness Analyses

Do advertising and R&D spending amortization periods matter? Following Hirschey and Weygandt (1985), we measured R&D and advertising spending using a five-year (three-year) period with an annual discount rate of 15 (40) We reestimated the models using four- and two-year amortization periods for R&D and advertising spending, respectively The results presented in Table 3, Columns 3 and 4, are generally consistent with those in Columns 1 and 2, demonstrating their robustness to alternative definitions of R&D and advertising spending

Do other industry characteristics matter? Next, we examined the robustness of the results to variations in competitive intensity (measured by the four-firm concentration ratio of the firm's industry defined by the two-digit SIC code) and industry turbulence (measured by the coefficient of variation in sales of the firm's industry, defined by the two-digit SIC code, over three prior years) We found that competitive intensity and industry turbulence did not affect the pattern of profit and stock returns rewards to R&D or advertising spending in recessions

Have patterns of returns to R&D and advertising spending changed over time?[9] To address whether patterns have changed over time, we estimated the regression models for profits in two additional subsamples that excluded (1) the last recession (2008) and (2) the last two recessions (2001 and 2008) The results of these two models (not reported here in the interest of brevity but available on request from the authors) are consistent with those reported for profits in Table 3, Column 1, demonstrating the stability of the returns to R&D and advertising spending with regard to profits in recessions over time

Results: Marginal Effects of R&D and Advertising

We use the estimated contingent effects Table 3, Columns 1 and 2, reports and data on a firm's market share, financial leverage, and product-market profile type to obtain firm-specific marginal effects of R&D and advertising spending on profits and stock returns in recessions and in nonrecessionary periods Because each marginal effect combines the estimates of the different contingent effects (Table 3), the marginal effect is a multivariate function of random variables (i e , it is obtained with a measure of uncertainty) We use Krinsky and Robb's (1986) method, recently used by Mantrala et al (2007) in marketing, to obtain the standard error and confidence intervals of the firm-specific marginal effects to assess their statistical significance We obtained 1000 draws of the coefficients for each marginal effect from a multivariate normal distribution (Mean and covariance are the estimated coefficients and their covariance matrix, respectively, in Table 3) These 1000 draws from the joint distribution of the coefficients provide 1000 simulated values of the firm-specific marginal effects Then, we obtained the lower and upper limits of a 95% confidence interval for each marginal effect (26th and 976th estimates of the sorted simulated values) to assess whether a given firm's marginal effect was positive and statistically significant, negative and statistically significant, or not significantly different from zero

Interpretation of the Marginal Effects

The marginal effect of (an increase in) R&D or advertising spending on profits in recessions and its associated statistical significance (negative, positive, or not statistically different from zero) indicates whether the firm is overspending, underspending, or spending at approximately the right level However, the marginal effects (positive, negative, or zero) of R&D and advertising spending on stock returns have different interpretations from their corresponding marginal effects on profits If the marginal effect of R&D (advertising) spending on stock returns is positive and significant, the firm is rewarded by the stock market for an increase in R&D (advertising) spending If the marginal effect of R&D (advertising) spending on stock returns is negative and significant, the firm is punished by the stock market for an increase in R&D (advertising) spending If the marginal effect of R&D (advertising) on stock returns is not significantly different from zero, the stock market is indifferent to an increase in R&D (advertising) spending

Summary of Marginal Effects

We generate insights into the marginal effects of R&D and advertising spending in recessions and in nonrecessionary periods by summarizing the overall patterns across firms in the four product-market profiles Specifically, we discuss the firm-specific marginal effects in recessions as (1) the marginal effect of R&D and advertising spending for (2) B2C goods, B2B services, B2B goods, and B2C services firms in recessions on (3) profits and stock returns respectively (i e , 2 × 4 × 2 = 16 cells) We summarize the marginal effects of R&D and advertising during recessions (and for completeness, during nonrecessionary periods) on profits in Table 4, Panels A and B, Columns 1 and 2, respectively, and on stock returns during recessions (and nonrecessionary periods) in Columns 1 and 2 of Table 5, Panels A and B, respectively Given our interest in firms' R&D and advertising spending in recessions, we display these results graphically in Figure 1

In each cell (e g , Table 4, Panel A, B2B goods, recession, R&D marginal effects), we report the mean, minimum, and maximum, respectively, of the firm-specific marginal effects pertaining to the cell (e g , in B2B goods firms, the minimum, mean, and maximum marginal effects of R&D in recession on profits are [– 506, – 003, 092]) Note that the mean of the firm-specific marginal effects in Tables 3 and 4 will not equal the mean marginal effect computed with the sample means of market share and financial leverage In addition, because firm-specific marginal effects in a

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[9] We thank an anonymous reviewer for raising this question

TABLE 4
Marginal Effects of R&D and Advertising Spending on Profits

A: Marginal Effects of R&D Spending on Profits: Recessions and Nonrecessionary Periods

Product Market	Recessions (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)	Nonrecessionary Periods (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)
B2C goods	(022, 100, 292) 0%, 2%, 98%	(- 039, - 000, 035) 15%, 72%, 13%
B2B services	(- 101, - 002, 053) 6%, 91%, 3%	(- 057, 000, 053) 9%, 83%, 8%
B2B goods	(- 506, - 003, 092) 16%, 68%, 16%	(- 178, 000, 113) 22%, 59%, 19%
B2C services	(- 028, 176, 345) 4%, 8%, 88%	(- 261, - 008, 062) 43%, 32%, 25%

B: Marginal Effects of Advertising Spending on Profits: Recessions and Nonrecessionary Periods

Product Market	Recessions (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)	Nonrecessionary Periods (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)
B2C goods	(- 104, - 022, 031) 2%, 98%, 0%	(- 040, 001, 131) 13%, 74%, 13%
B2B services	(- 112, - 001, 076) 3%, 96%, 1%	(- 131, 001, 323) 25%, 46%, 29%
B2B goods	(- 157, 012, 187) 6%, 59%, 35%	(- 110, - 000, 137) 31%, 41%, 28%
B2C services	(- 434, - 167, 055) 92%, 8%, 0%	(- 056, - 002, 027) 11%, 78%, 11%

Notes For example, for the row "B2C goods," the marginal effects of R&D spending for B2C goods firms in recessions range from a low of 022 to a high of 292 (Column 1, first row of Panel A) No B2C goods firm (0%) overspends, and 98% of B2C goods firms could increase profits by increasing R&D spending during recessions

given cell may be positive, negative, or zero, comparisons of marginal effects across cells are not meaningful In the following sections, we discuss the incidence of statistically significant positive, negative, and zero effects during recessions and, for completeness, nonrecessionary periods

Marginal Effects on Profits

With respect to recessions, the results in Table 4 (Columns 1 in Panels A and B) and Figure 1, Panels A and B, indicate that the general tendency for B2C goods firms (98%) is to underspend on R&D and for B2C services firms (92%) to overspend on advertising However, 96% of the B2B services firms spend advertising at levels that are approximately right During recessions, while most B2B goods firms have R&D (68%) and advertising spending (59%) levels that are approximately accurate from a profit perspective, many of them underspend on R&D (16%) and advertising (35%), and others overspend on R&D (16%) and advertising (6%)

During nonrecessionary periods, most B2B goods firms have R&D (59%) and advertising spending (41%) levels that are approximately accurate from a profit perspective, though some of them overspend on R&D (22%) and advertising (31%) and yet others underspend on R&D (19%) and advertising (28%) For B2C goods firms, 72% spend approximately the right amount during nonrecessionary periods on R&D, 78% of B2C services firms spend at levels that are about right on advertising during nonrecessionary periods, and 11% of B2C services firms overspend on advertising However, some B2B services firms misspend on advertising during nonrecessionary periods, with 29% and 25% of them underspending and overspending, respectively

Marginal Effects Related to Stock Returns

The results in Table 5 (Columns 1 in Panels A and B) and Figure 1, Panels C and D, indicate that during recessions, some B2B goods firms (29%) and many B2C services firms (58%) generate positive stock returns in response to increases in R&D and advertising spending, respectively However, some B2B firms (42% of B2B goods firms and 46% of B2B services firms) obtain negative stock returns in response to increases in advertising spending during recessions

With respect to nonrecessionary periods, the dominant tendency is for null stock returns in response to changes in advertising (58% of B2B goods firms and 82% of B2B services firms) While increases in R&D spending by B2B goods firms (100%) and increases in advertising spending by B2C services firms (97%) garner little positive stock returns during nonrecessionary periods, several B2B goods firms (29%) and many B2C services firms (58%) generate positive stock returns in response to increases in R&D and advertising, respectively, during recessions Next, we discuss the implications of the findings for managerial practice and marketing theory

TABLE 5
Marginal Effects of R&D and Advertising Spending on Stock Returns

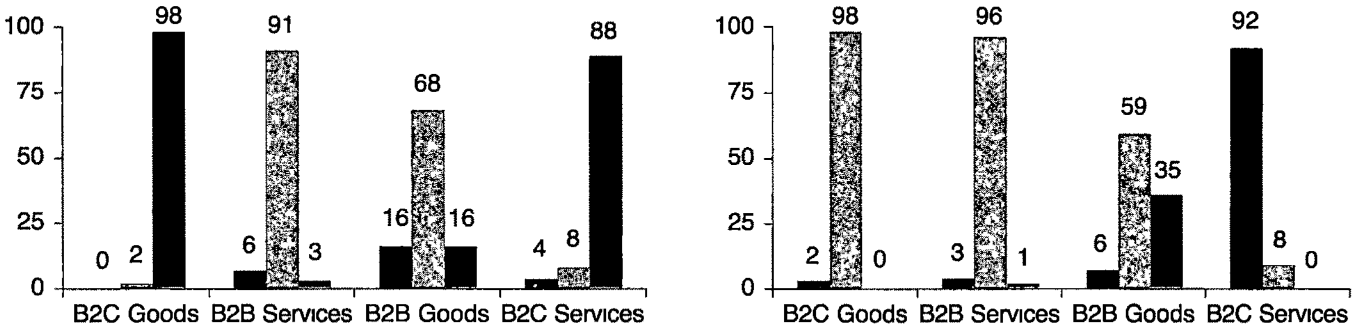
A. Marginal Effects of R&D Spending on Stock Returns: Recessions and Nonrecessionary Periods

Product Market	Recessions (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)	Nonrecessionary Periods (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)
B2C goods	(– 008, 001, 013) 0%, 98%, 2%	(– 003, 000, 010) 0%, 100%, 0%
B2B services	(– 025, – 002, 003) 11%, 89%, 0%	(– 013, – 001, 005) 0%, 100%, 0%
B2B goods	(– 076, 001, 017) 3%, 68%, 29%	(– 003, 000, 003) 0%, 100%, 0%
BB2C services	(003, 021, 047) 0%, 58%, 42%	(– 003, – 001, 009) 0%, 100%, 0%

B: Marginal Effects of Advertising Spending on Stock Returns: Recessions and Nonrecessionary Periods

Product Market	Recessions (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)	Nonrecessionary Periods (Minimum, Mean, Maximum) % Negative, % Zero, % Positive, ($p < .05$)
B2C goods	(– 012, 000, 013) 0%, 100%, 0%	(– 006, 000, 004) 1%, 97%, 2%
B2B services	(– 030, – 010, 007) 46%, 54%, 0%	(– 007, 001, 004) 5%, 82%, 13%
B2B goods	(– 022, – 004, 026) 42%, 56%, 2%	(– 011, 000, 009) 18%, 58%, 24%
B2C services	(023, 031, 038) 0%, 42%, 58%	(– 012, – 001, 005) 0%, 97%, 3%

FIGURE 1
Summary of Marginal Effects by Product Market Profile

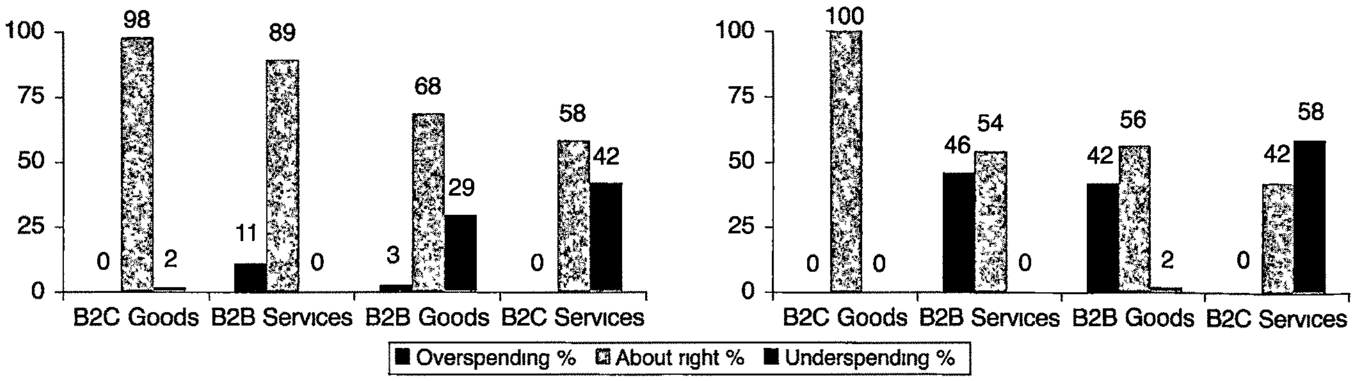


A: Marginal Effects of R&D on Profits

B: Marginal Effects of Advertising on Profits

C: Marginal Effects of R&D on Stock Returns

D: Marginal Effects of Advertising on Stock Returns



Discussion

To address whether firms should spend more on R&D and advertising during recessions, we developed a contingency-based approach to model the relationship between a firm's R&D and advertising spending in recessions and its performance and tested that model using a data set that covers seven recessions Our empirical modeling approach enabled us to incorporate unobserved heterogeneity, serial correlation, and random errors Our findings are robust to alternative variable specifications and to the inclusion of two industry characteristics (i e , competitive intensity and industry turbulence) and are in general stable over time

We find support for a contingency approach to study the performance rewards to R&D and advertising in recessions Our marginal effects analyses provide evidence of inadequate spending (e g , 98% of B2C goods firms underspend on R&D), proactivity (e g , 96% of B2B services firms are at approximately the right levels on advertising), and excess spending (e g , 92% of B2C services firms overspend on advertising) in recessions

Managerial Implications

We generate managerial implications for firms' spending in recessions For managers seeking general guidelines, Tables 3 and 4 provide the overall pattern of marginal effects of R&D and advertising spending by firms in the different product-market profile (percentage underspent, overspent, or spent approximately right in past recessions) Managers seeking more customized guidance can use our statistical approach to generate firm-specific estimates of the effectiveness of their firm's (and their competitors') R&D and advertising spending in recessions

Which Firms Benefit from R&D and Advertising Spending in Recessions?

The current study offers several findings on the marginal effects of R&D and advertising on profits and stock returns in recessions (Tables 4 and 5) that generate specific managerial guidelines

1 *B2C goods firms* (a) Profits In recessions, most B2C goods firms underspend on R&D and are at approximately the right levels of advertising with respect to profits Managers of these B2C goods firms can consider increasing their R&D spending in recessions, which should increase their profits (b) Stock returns However, B2C goods firms do not obtain positive stock returns from either R&D or advertising spending

2 *B2B services firms* (a) Profits In recessions, most B2B services firms are at approximately the right levels of R&D and advertising with respect to profits Managers of these firms need not change their R&D and advertising spending in recessions if they are focused on profits (b) Stock returns However, B2B services firm investors do not reward R&D and advertising

3 *B2B goods firms* (a) Profits In recessions, most B2B goods firms spend at approximately the right levels of R&D and advertising with respect to profits Managers of these firms need not change their spending in recessions (b) Stock returns However, some B2B goods firms get positive stock returns in response to R&D spending (i e , recessions are an opportunity for them) and negative stock returns in response to advertising

4 *B2C services firms* (a) Profits In recessions, most B2C services firms underspend on R&D and overspend on advertising with respect to profits Therefore, these firms can consider increasing their R&D spending and decreasing their advertising spending in recessions to improve their profits (b) Stock returns Many B2C services firms achieve positive stock returns in response to their R&D and advertising spending

What Are the Returns to Firms' (and/or Competitors') R&D and Advertising Spending in Recessions?

Using our approach and publicly available data on R&D spending, advertising spending, market share, financial leverage, and product-market profiles, managers can compute firm-specific estimates of the effects of their firms' and their competitors' R&D and advertising spending during recessions (and nonrecessionary periods) on profits and stock returns The Appendix provides detailed instructions describing how managers can implement the approach we propose to generate firm-specific insights

Table 6 illustrates this approach for four publicly listed firms in our sample during two recent recessions (2001, 2008) For Firm A, the marginal effects of R&D and adver-

TABLE 6
Illustrative Application of Marginal Effects Analysis

Characteristic	Firm A	Firm B	Firm C	Firm D
Product-market profiles	B2B services	B2B goods	B2C goods	B2C services
Recession year	2008	2001	2001	2008
R&D ($ million)	6015	650	131	34
Advertising ($ million)	1259	184	489	584
R&D on profit marginal effect	– 021**	– 001 (n s)	080***	249***
Advertising on profit marginal effect	– 001 (n s)	018 (n s)	– 018 (n s)	– 113**
R&D on stock returns marginal effect	– 006**	000 (n s)	– 001(n s)	023 (n s)
Advertising on stock returns marginal effect	001 (n s)	– 001 (n s)	002 (n s)	031**

*$p < 10$
**$p < 05$
***$p < 01$
Notes Implications Firm A A decrease in R&D spending increases both profits and stock returns Firm B Firm seems to be spending approximately right in R&D and advertising Firm C An increase in R&D spending increases profits Firm D An increase in R&D spending increases profits (but has no effect on stock returns) A decrease in advertising spending increases profits, while an increase in advertising spending increases stock returns n s = not significant

tising on profits in 2008 were -021 ($p <$ 05) and 001 (n s), and on stock returns in 2008 they were -006 ($p <$ 05) and 001 (n s), respectively[10] These results suggest that the firm overspent on R&D and spent approximately the right amount on advertising from a profit perspective However, Firm D underspent on R&D and overspent on advertising with respect to profit, but the stock market did not reward this firm for increases in R&D spending, though it rewarded the firm for an increase (rather than a decrease) in advertising spending (Note that the stock market's valuation of a firm's actions is complex, and there is some evidence of mispricing [see Aksoy et al 2008] a topic that is beyond the scope of this study)

Interested managers can compare the marginal effects of their firms' (and competitors') R&D and advertising spending on profits and stock returns during recessions with those during nonrecessionary periods to assess how the performance rewards vary with economic cycles

Implications for Theory

Performance rewards to spending in recessions This article's findings enrich the understanding of the effects of marketing in recessions Unlike Srinivasan, Lilien, and Rangaswamy (2005), who focus on a single recession, using subjective performance data from surveys of managers, we use actual performance data covering multiple recessions while controlling for the contingent effects of firm characteristics on the rewards to R&D and advertising spending in recessions Moreover, we investigate both a short-term performance metric, accounting profit, as well as a long-term metric, stock return The findings from the marginal effects analyses, which identify conditions in which firms overspend on R&D and advertising during recessions, generalize Srinivasan, Lilien, and Rangaswamy's (2005) finding that increases in marketing activities in recessions improve profits for some firms but not for others

Our findings also help reconcile the mixed findings in the literature on the rewards to R&D and advertising spending Some studies report a positive effect of increases in R&D and advertising spending in recessions on profits (e g , Capon, Farley, and Hoenig 1990) and stock returns (Griliches 1981), while others find no effect (e g , Erickson and Jacobson 1992) on either profits or stock returns The support for the contingency-based approach suggests that the rewards to firms' R&D and advertising programs during recessions differ by firm characteristics—market share, leverage, and product-market profile—even after controlling for the economic environment (i e , whether there is a recession) These results also clarify the mixed findings for the profit rewards in response to increases in R&D and advertising spending during recessions (e g , Graham and Frankenberger 2008, Tellis and Tellis 2009)

Recessions and the effects of firms' R&D and advertising spending on performance As we noted previously, from a theory-building perspective, a positive three-way contingent effect offers insights into the performance increase (decrease) of R&D (advertising) spending attributable to the recession Referring to our illustration, the coefficient ψ_{12} (a three-way interaction) in Equation 3 captures how recession changes the effect of Z_1 in the X–Y relationship, and ψ_{11} captures the X–Y relationship during nonrecessionary periods Thus, integrating knowledge from the estimates of ψ_{12} and ψ_{11} helps identify the recession-based boundary condition in a contingent model of how Z_1 influences the X–Y relationship

As an example, consider the effect of market share and R&D spending on profit The two-way interaction effect between R&D and market share ($b =$ 005, $p <$ 001) in Table 3 indicates that in nonrecessionary periods, all else being equal, an increase in market share increases the positive effect of R&D spending on profit Integrating this result with the positive three-way interaction effect of R&D, market share, and recession ($b =$ 003, $p <$ 001) in Table 3 indicates that recession strengthens the benefits of R&D spending conferred by market share Other three-way contingent effects may be interpreted similarly, thus adding recession-based boundary conditions to extant knowledge of advertising and R&D effectiveness

Contingencies in the effects of R&D and advertising spending on stock returns From a theoretical perspective, the article's insights into the contingent effects of R&D and advertising spending on stock returns during recessions also contribute to the marketing metrics literature, which has, for the most part, focused on the main effects of R&D and advertising spending (e g , McAlister, Srinivasan, and Kim 2007) Finally, the rewards to R&D and advertising spending in recessions on profits and stock returns vary across B2C goods, B2B services, B2B goods, and B2C services firms Although we provide some explanations for these differences, further work that refines the contingent nature of the theory here would be useful

Limitations and Further Research

This research has limitations that offer opportunities for further research In our empirical analysis, we did not distinguish between service firms with contractual relationships (e g , cell-phone contracts) and those with noncontractual relationships that can be easily changed in the short term (e g , contract with a market research supplier) We might expect differences in the effects of R&D and advertising spending in recessions on performance between these types of service firms Further research focusing on contractual versus noncontractual services firms could lead to new insights

In addition, our work is based in the United States, and we do not consider the role of firms' global economic activity In the period under study, our research indicated that recessions in advanced economies coincided with recessions in United States (Claessens and Kose (2009) Further research that examines cross-country differences in the effects of R&D and advertising spending in recessions would be a useful extension

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[10] We obtained the statistical inference reported in this section using Krinsky and Robb's (1986) method

We focused on firms' R&D and advertising spending as proxies for their product development and marketing spending, respectively, and profits and stock returns as proxies for firm performance However, recessions threaten firm survival, a metric that may be considered in further research In addition, while changes in firms' advertising and nonadvertising budgets are correlated because elements of integrated programs are frequently aligned (Lilien and Ruzdic 1982), analysis of the effects of distribution channels (e g , Amazon com), pricing (e g , Wal-Mart) and supply chain management (e g , Dell) strategies on firm performance, including survival, in recessions would be useful

Our use of secondary data precluded consideration of organizational factors (e g , culture, market orientation, product portfolios), which are critical in leveraging returns from R&D and advertising spending Further research could relate organizational factors in recessions to other metrics using complementary methods (e g , surveys, in-depth interviews)

Additional analyses indicated that R&D and advertising spending patterns of sample firms vary across recessions and nonrecessionary periods and multiple recessions[11] Further research that uses a combination of approaches (e g , surveys, in-depth interviews) and examines whether managers know of the marginal effects of changes in their advertising and R&D spending during recessions compared with nonrecessionary periods, and learn across multiple recessions would be a useful extension to this work

Furthermore, a comparison of the marginal effects of R&D and advertising spending on profits and stock returns for the firms in our sample (reported in Tables 4 and 5) suggests that although there is a match in a few cases between the marginal effects on profits and stock returns, in other cases, the marginal effects of R&D and advertising spending on profits differ from the effects on stock returns These findings, which add to the ongoing debate in the literature on the mispricing of stocks with respect to marketing spending, offer an opportunity for further research

Finally, we used the NBER definition of recessions, which affects consumer demand However, recessions vary in their severity, and one way to capture the differences in the severity of the recession is the extent of the decline in the gross domestic output Future work that explores the effectiveness of marketing spending in recessions of different severity would be useful

A rising tide may lift all boats, but the corollary to that statement is that successful navigation at low tide shows the sailor's true merit We view this study as a useful step in exploring the performance implications of marketing activities in a recession, helping marketers determine how best to navigate during such troubled times We hope this study sheds some light on the subject and stimulates further work in the domain

The firm-specific R&D and advertising effects β_i's and θ_i's are relegated to the error term We use lags of higher order than the error term as instruments to obtain consistent estimates of the parameter estimates without estimating the firm heterogeneity parameters β_i's and θ_i's

Appendix
Obtaining the Marginal Effects

We describe the statistical procedure managers can use to calculate the marginal effects of an instrument (advertising/R&D) on performance (profits/stock returns) given the idiosyncratic characteristics of the firm (market share/financial leverage/product market profile) and the environment (recession/nonrecessionary period)

1 For a given firm, obtain the data relevant to the marginal effect, which include data on the firm's advertising/R&D spending, market share, financial leverage, and product market profile The coefficient estimate vectors pertaining to the profits equation $\psi^p = \{\beta_0^p, \quad , \beta_{21}^p, \theta_0^p, \quad , \theta_{21}^p\}$ and the stock returns equation $\psi^s = \{\beta_0^s, \quad , \beta_{21}^s, \theta_0^s, \quad , \theta_{21}^s\}$ and variance–covariance matrix of the estimates pertaining to the profits equation (Σ^p) and the stock returns equation (Σ^s)
2 Draw 1000 values of ψ_j^p ($j = 1, 2, \quad , 1000$) from the normal distribution $N(\psi^p, \Sigma^p)$ and 1000 values ψ_j^s from the normal distribution $N(\psi^s, \Sigma^s)$ The output from this step is a representative set of estimates obtained with their associated uncertainty
3 (a) Obtain the marginal effect of R&D and advertising spending on profits (in time period t) by differentiating Y_{it}^p in Equation A1 with regard to R&D and advertising, respectively (b) Evaluate the expression for each value of ψ_j^p ($j = 1, 2, \quad , 1000$) for every firm by using its idiosyncratic values of market share, financial leverage, and product market profile dummy In addition, if the focal year during which an evaluation is made constitutes a recession year (time period t), evaluate the expression by setting the term REC_t to 1, otherwise, set REC_t to 0 In evaluating the expression, the manager will also be required to control for spending, market share, financial leverage, and whether the previous two years were recession years, because the model also controls for past period contingencies (see Equation A1) (c) Similarly, obtain the marginal effect of R&D and advertising on stock returns (in time period t) as described previously by using Y_{it}^s and ψ_j^s (d) Denote the marginal effects in each of the j evaluations as ME_{P,RD_j} (marginal effect of R&D on profits), ME_{P,AD_j} (marginal effect of advertising on profits), ME_{S,RD_j} (marginal effect of R&D on stock returns), and ME_{S,AD_j} (marginal effect of advertising on stock returns), respectively
4 (a) From the 1000 simulated values of ME_{P,RD_j}, ME_{P,AD_j}, ME_{P,AD_j}, and ME_{S,RD_j}, obtain the lower and upper limits of a 95% confidence interval for each marginal effect (26th and 976th estimates of the sorted simulated values) to assess whether a given firm's marginal effect was positive and statistically significant, negative and statistically significant, or not significantly different from zero (b) Apply the logic described in the subsection titled "Interpretation of the Marginal Effects"

Thus, the four-step procedure constitutes a diagnostic tool that determines the marginal effect of a given spending on the particular performance variable of interest during recessions and nonrecessionary periods

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[11] We thank an anonymous reviewer for this suggestion

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Alexander Chernev, Ryan Hamilton, & David Gal

Competing for Consumer Identity: Limits to Self-Expression and the Perils of Lifestyle Branding

The idea that consumers use brands to express their identities has led many companies to reposition their products from focusing on functional attributes to focusing on how they fit into a consumer's lifestyle This repositioning is welcomed by managers who believe that by positioning their brands as means for self-expression, they are less likely to go head-to-head with their direct competitors However, the authors argue that by doing so, these companies expose themselves to much broader, cross-category competition for a share of a consumer's identity Thus, they propose that consumers' need for self-expression through brands is finite and can be satiated when consumers are exposed to self-expressive brands Moreover, they argue that consumers' need for self-expression can be satiated not only by a brand's direct competitors but also by brands from unrelated product categories, nonbrand means of self-expression, and self-expressive behavioral acts The authors examine these propositions in a series of five empirical studies that provide converging evidence in support of the notion that the need for self-expression can be satiated, thus weakening preferences for lifestyle brands

Keywords brand, preferences, identity, self-expression, lifestyle, competition

One of the significant marketing changes in the past decade involves the dramatic increase in the variety of ways in which consumers can express their identities A key driver of this change has been the growth of one-to-one marketing and mass customization, which has not only expanded accessibility to traditional means of self-expression (e g , hobbies, cheering for favorite sport teams and music groups, wearing iconic brands) but also introduced a variety of innovative self-expressive formats

A recent vehicle for self-expression involves the ability to customize company offerings to reflect individuals' personal preferences For example, Coke recently introduced its Freestyle fountain drink machines, providing customers with the option to mix selections from more than 100 choices into a custom beverage, and Starbucks allows customers to create their own beverage from more than 50,000 possible combinations In addition to expressing their identity through choice, customers often engage in acts of self-expression by customizing products to reflect their identity Such self-expressive acts are ubiquitous They can involve selecting the ringtone of a mobile phone or customizing the background of a computer or mobile phone Consumers can customize the face of a credit card, and the look of a T-shirt, sneakers, or a backpack People can even customize the content of a classic novel by embedding themselves into the plot

The rapid growth of social media and peer-to-peer communications present another opportunity for self-expression Facebook, YouTube, and Twitter provide customers with an environment in which they can voice their opinions and find other people that share the same interests, thus enriching their social identity Virtual reality games, such as Second Life and The Sims, not only allow customers to express their identity but also enable them to create new personas

Recent developments in Internet technology and mobile communications have further contributed to customers' ability to express their identity by allowing customized media content 24 hours a day, seven days a week Portable multimedia devices such as the iPod, iPhone, and iPad—along with the likes of Pandora Radio, Rhapsody, and Napster—have made it easy for consumers to listen to their music of choice, follow the performance of their favorite sports team, and watch their favorite television shows whenever and wherever they choose This unprecedented access to personally relevant self-expressive offerings and information raises the question of how this increase in the means of self-expression—both in terms of number and access—sways consumer preferences In particular, this research examines how the availability of alternative means of self-expression influences consumer preferences for self-expressive brands

Prior research has documented the role of brands as a means of self-expression in various contexts, such as the role of brands as identity signals (Berger and Heath 2007),

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ISSN 0022-2429 (print), 1547-7185 (electronic)

the role of reference groups as a source of brand meaning (Escalas and Bettman 2005), the nature of the consumer–brand relationship (Aggarwal 2004, Fournier 1998, Kleine, Kleine, and Kernan 1993), the role of brands as indicators of prestige value (Braun and Wicklund 1989), and the strength of consumers' emotional attachments to brands (Thomson, MacInnis, and Park 2005) However, despite this extensive research, questions involving the extent to which brands can serve as a means of self-expression and the boundaries of expressing one's identity through brands have remained largely unexplored In fact, most prior research has implicitly assumed that consumers' need to express their identities is constant and does not depend on the number of available means to fulfill this need [e g , Amaldoss and Jain 2005, Braun and Wicklund 1989, Kim and Sherman 2007)

To illustrate this point, consider several consumers with identical preferences One consumer recently purchased a Nautica jacket, a second one just came back from a concert by his favorite band, a third was browsing the branded apparel in a shopping mall, a fourth just finished watching a baseball game featuring her favorite team, and a fifth was playing with LEGOs, building an action figure of Iron Man, his favorite action hero Now imagine these consumers contemplating the purchase of an unrelated branded item (e g , a Movado watch) Would their brand preferences be affected by their previous actions? In particular, would they believe the Movado brand to be as personally relevant as a consumer who did not engage in any of these activities? Would their prior behavior affect the degree to which they differentiated the Movado brand from other watch brands? Would their willingness to pay be influenced by their prior activities?

Conventional wisdom suggests that consumers' brand preferences are not likely to be affected by their actions in unrelated product categories and/or domains In the context of the preceding example, this implies that as long as consumers have identical preferences, the perceived brand uniqueness, the relevance of the Movado brand to consumers, and their willingness to pay for this brand should be the same In contrast, we show that this is not the case and that consumer brand preferences are a function of the activities they were involved in prior to evaluating a given brand—more specifically, the degree to which these prior activities afforded the opportunity to express their identities This argument is based on the notion that consumers' need for self-expression is finite and ultimately can be satiated, such that the value consumers place on self-expressive brands tends to decrease as the number of alternative means of self-expression increases

Furthermore, we propose that consumers' reliance on a given brand to express their identity not only depends on brands in the same category but is also a function of the availability of alternative means of self-expression, such as brands in unrelated product categories and even nonbrand means of self-expression, including relevant affiliations, hobbies, and social interactions To illustrate, a consumer's preference for the Ralph Lauren brand is likely to be a function of the strength of the consumer's associations with cross-category self-expressive brands (e g , Apple, Swatch, Whole Foods Market) or even whether the consumer has recently engaged in self-expressive activities such as creating a work of art, updating a Facebook profile, and donating to a philanthropic organization We outline the theory leading to these predictions in more detail in the following sections

Theoretical Background

Brands as Means of Self-Expression

Brands are commonly defined as marketing tools created for the purpose of differentiating a company's offering from the competition and creating value for target customers (Keller 2007) Brands create value for customers on two dimensions by serving to signal the quality of the underlying offerings (Wernerfelt 1988) and creating meaningful associations that add value beyond the intrinsic product attributes (Fournier 1998, Gardner and Levy 1955) The increased degree of product commoditization in the past two decades, stemming from standardization of technological design and manufacturing processes, has made brand associations—in particular, associations related to one's self-identity—an increasingly important source of brand value

A central tenet of this research is that consumers use brands to express and validate their identity (Aaker 1997, Berger and Heath 2007, Escalas and Bettman 2005) This proposition stems from the more general notion that individual behavior is motivated by the need to reaffirm self-image (Dunning 2005, Rogers 1947) In this context, prior research has shown that brands are often valued to the extent that they reaffirm people's principles or beliefs (Kleine, Kleine, and Kernan 1993, Levy 1959, Solomon 1983)

The self-expressive function of brands can be related to the notion of conspicuous consumption, a term used to describe the acquisition of products mainly for the purpose of attaining or maintaining social status (Veblen 1899) Typically, conspicuous consumption involves lavish spending on brands for the purpose of self-expression by displaying income or wealth The notion that consumers conspicuously use brands that display their knowledge of culture, taste, or style has received further support from recent consumer research (Amaldoss and Jain 2005, Twitchell 2002) Brands can also be used to communicate membership in particular social or professional groups, through both the use of brands that signal membership in desirable groups (Braun and Wicklund 1989, Escalas and Bettman 2005, Wicklund and Gollwitzer 1981) and the avoidance of brands that signal membership in undesirable groups (Berger and Heath 2007) Furthermore, brands have been shown to convey otherwise hidden aspects of a consumer's self-image because consumers frequently choose brands that they consider appropriate for the image they have of themselves (Dolich 1969, Tucker and Painter 1961)

In addition to serving as an external signal, brands can serve to establish and confirm a consumer's self-concept and identity without explicitly aiming to attain social status, recognition, or acceptance (Belk 1988, Fournier 1998) In this case, people's motivation to express their inner states is guided by the desire to signal their self-identity not to others but to themselves (Bodner and Prelec 2003, Loewenstein 1999) This self-signaling aims to reaffirm people's perception of the type of person they are The idea of self-signaling as a driver of people's decisions is consistent with the notion that by revealing their preferences, consumers derive self-diagnostic utility from choice, allowing them to discover or define their own preferences (Akerlof and Kranton 2000) In this context, it has been shown that consumers tend to prefer brands that are more similar to their ideal self-concept in the context of conspicuous consumption but prefer brands more similar to their actual self-concept when the consumption is inconspicuous (Ross 1971)

Identity Saturation and Brand Preferences

The finding that people use brands to express their identities raises the question of identifying factors that influence a brand's ability to serve as a means of self-expression and, in particular, the boundaries of the self-expressive capacity of brands Most prior research has implicitly assumed that a brand's ability to serve as a means of self-expression is primarily a function of brand-specific factors (e g , a brand's symbolic value) and that it does not change with the availability of other means of self-expression In contrast, we argue that a consumer's need for self-expression can be temporarily satiated whenever consumers express themselves As a result, there are limits to their use of brands to express their identities This means that as consumers express their identities—through brands or other means—their need for further self-expression tends to decline along with their preferences for subsequently evaluated self-expressive brands To illustrate, a consumer who associates strongly with a brand because it fulfills the need for self-expression might have weaker preferences for other self-expressive brands relative to someone who has not established a close relationship with a self-expressive brand Moreover, merely making consumers aware of the different means they already use to express their identity is likely to decrease their need to self-express in subsequent choices Thus, we argue that when a consumer's need for self-expression has already been met by some brands, additional self-expressive brands are relatively less attractive

The proposition that a consumer's need for self-expression is finite builds on the more general principle that consumers seek to fulfill their needs and may experience satiation when those needs have been met Previous research has shown that when a need is strong, people value the means of satisfying that need, when the need is weak, the same means are valued less (Lewin 1935) For example, consumers are willing to pay more for food when hungry (Wertenbroch and Skiera 2002), smokers value cigarettes more when deprived of nicotine (Brendl, Markman, and Messner 2003), and students standing in line to pay their tuition are willing to pay more for a tuition-waiver lottery than for a lottery with an equivalent cash payout (Markman and Brendl 2000)

Satiation has been invoked to explain behavior in a variety of domains For example, research on consumer variety seeking (Kahn and Wansink 2004, Lattin and McAlister 1985, Simonson 1990) has indicated that as consumers become satiated on the configuration of attributes specific to one offering, the value they derive from repeated consumption of the preferred offering decreases to the point where other alternatives become more attractive Prior research has documented satiation effects in a variety of domains including food (Inman 2001), massages (Nelson and Meyvis 2008), music (Ratner, Kahn, and Kahneman 1999), television (Nelson, Meyvis, and Galak 2009), art (Berlyne 1971), and consumer products (McAlister 1982, Redden 2008)

Recognizing that some of the value consumers derive from brands comes from meeting a more general need for self-expression implies that consumer brand preferences are a function of the availability not only of other self-expressive brands but also of all alternative means of expressing identity In this context, we propose that the extent to which consumers use brands to express their identities is not limited to self-expressive brands in the same category but is also a function of the availability of alternative means of expressing identity Such means can include self-expressive brands in unrelated product categories, nonbrand self-expressive items, and self-expressive behavioral acts For example, the introduction of Apple's iPhone may have weakened the personal relevance and brand preferences not only of other smart phone brands but also of brands in unrelated categories, such as apparel, food, and fashion accessories Likewise, to the degree that articulating preferences for nonbrand items (e g , a favorite book, pastime, vacation spot) expresses a consumer's identity, it is also likely to weaken a consumer's brand preferences

We examine the impact of satiation on consumers' need for self-expression on three key dimensions of brand preferences a brand's personal relevance, a brand's perceived uniqueness, and consumers' willingness to pay for a particular brand A brand's personal relevance captures the self-expressive function of a brand by focusing on the degree to which consumers perceive a brand to be related to their identity and to which they have closer personal relationships than with other brands (Aaker 1997, Aaker, Fournier, and Brasel 2004, Fournier 1998) Stronger preferences for a self-expressive brand are likely to be reflected in greater perceived personal relevance of the brand and a closer perceived relationship with the self-expressive brand A brand's perceived uniqueness reflects the degree to which consumers view brands to be differentiated from one another (Amaldoss and Jain 2005, Berger and Ward 2010) Thus, stronger preferences for a self-expressive brand should be associated with greater perceptions of brand differentiation Finally, willingness to pay represents the behavioral outcome associated with the strength of a consumer's brand preferences (Thaler 1985, Wertenbroch and Skiera 2002) The stronger a consumer's preference for a brand, the more a consumer should be willing to pay for that brand

To summarize, we argue that a person's need to express his or her identity is finite and tends to be satiated through alternative means of self-expression As a result, the value consumers place on self-expressive brands is likely to decrease as the number of alternative means of self-expression increases We further posit that consumer preferences for a particular self-expressive brand can be weakened due to satiation not only by brands in the same product category but also by brands in unrelated categories, by nonbrand items, and by self-expressive behaviors We expect identity saturation to influence brand preferences in three key aspects decrease a brand's personal relevance, increase a brand's perceived similarity to other brands, and decrease a brand's monetary valuation (willingness to pay) by consumers

We test the preceding predictions in a series of five experiments that examine the impact of the availability of alternative means of self-expression on consumer brand preferences and investigate some of the key factors that moderate this effect In the first experiment, we examine whether merely asking consumers to articulate their favorite brands weakens their subsequently elicited brand preferences in unrelated product categories Building on the findings from this study, the second experiment investigates whether nonbrand means of self-expression (e g , identifying favorite sports teams, songs, hobbies) are likely to decrease the personal relevance of subsequently evaluated brands This experiment also shows that the effects of identity saturation are more pronounced for symbolic than functional brands Experiment 3 demonstrates that merely evaluating a series of self-expressive brands is likely to decrease consumer preferences for unrelated brands Experiment 4 further documents that the proposed identity saturation effect is a function of the strength of a person's need for self-expression, such that it is more pronounced in the presence of a threat to self-identity Finally, Experiment 5 demonstrates that engaging in a self-expressive behavior, such as product customization, can satiate a person's need for self-affirmation, subsequently weakening preferences for self-expressive brands We use converging measures of consumer brand preferences—brand relevance, brand similarity, and willingness to pay—across all five experiments to document the identity saturation effect and explore its underlying process

More specifically, our first experiment examines whether brand preferences can be influenced simply by asking consumers to think about unrelated brands that they are already using to express their identities If, as we hypothesize, articulating one's favorite brands is likely to lower the need for self-expression, then merely thinking about relevant self-expressive brands will lower the value the consumer places on a brand's ability to serve as a means of self-expression Therefore, Experiment 1 tests the proposition that a person's brand preferences are a function of the self-expressive capacity of previously adopted brands, such that increasing the salience of brands already used to express one's self- identity will decrease preferences for subsequently evaluated brands

Experiment 1

The primary goal of Experiment 1 is to test the proposition that a person's reliance on brands as a means of self-expression is likely to decrease as the awareness of alternative but unrelated means of self-expression increases In particular, this experiment examines whether asking people to express their identity by articulating their favorite brands tends to weaken their preferences for subsequently evaluated brands

Method

Respondents were 102 students randomly assigned to one of two scenarios Respondents assigned to the first scenario were asked to think of brands that were personally very important to them and to list up to eight brands they considered the most relevant (high self-expression condition) In contrast, respondents assigned to the second scenario were asked to think of brands that were personally relevant to their parents and to list up to eight brands their parents considered the most relevant (low self-expression condition) We chose parents as a group from whom respondents were likely to dissociate themselves, such that identifying brands relevant to this group was likely to strengthen respondents' need for self-expression in the subsequent brand evaluation task

Following the self-image articulation task, respondents evaluated a set of brands in five product categories Each evaluation task consisted of five brands backpacks (The North Face, JanSport, Columbia, Mountain Hardwear, Timbuk2), watches (Movado, Swatch, Rolex, Seiko, Omega), deodorant (Gillette, Degree, Sure, Right Guard, Ban), sunglasses (Oakley, Foster Grant, Revo, Giorgio Armani, Ray-Ban), and jeans (Levi's, Lucky Brand, Lee, Calvin Klein, Versace)

We measured strength of preferences for the available brands by asking respondents to evaluate brands in terms of their personal relevance (Broniarczyk and Alba 1994) In particular, respondents allocated 100 points among the five brands based on the degree to which they perceived them to be personally relevant At one extreme, respondents who perceived all brands to be equally relevant would allocate an equal amount of points (20) to each brand At the other extreme, respondents who perceived a particular brand to be very personally relevant would allocate 100 points to their most preferred brand and 0 points to the other brands

Results

A key premise of the experimental manipulation is that articulating personally relevant brands is likely to be associated with a greater degree of self-expression and, thus, more likely to decrease respondents' need for subsequent self-expression than articulating outgroup-relevant brands To check the validity of this assumption, we administered the self-expression task to a separate group of 39 respondents from the same population and asked them to generate a list of up to eight brands that were either very personally relevant to themselves or very personally relevant to their parents We tested the impact of the brand elicitation task on respondents' need for self-expression by asking them to draw a stick figure picture of themselves both before and after the brand elicitation task We conjectured that if respondents' need for self-expression had been (at least partially) satiated by the brand-elicitation task, their drawings of themselves following the brand-elicitation task would decrease in size, whereas the opposite effect would be observed if respondents' need for self-expression had been strengthened by the brand-elicitation task This prediction is based on prior research showing that more acute needs can lead people to place greater value on the means of fulfilling the need (Markman and Brendl 2000, Wertenbroch and Skiera 2002) and that this value can sometimes be manifested through larger physical representations of the means of satiating the need For example, smokers deprived of nicotine judged the true length of a standard cigarette to be longer than did people who had recently smoked (Brendl, Markman, and Messner 2003), and children from poor families judged coins to be larger than did children from wealthy families (Bruner and Goodman 1947)

The data show that respondents who listed self-relevant brands subsequently drew smaller representations of themselves than they did before the brand-listing task (mean height difference = –5 3 mm, range –24 mm to 14 mm, SD = 1 0) In contrast, participants who listed brands relevant to someone else subsequently drew larger self-representations than they did before the brand-listing task (mean height difference = 4 6 mm, range 14 mm to 76 mm, SD = 2 1) We tested the significance of these data by examining a model in which the height of respondents' drawings was given as a function of the drawing sequence (before or after the self-expression task) and the nature of the self-expression task (low vs high self-expression) The data show that the difference in self-representations across the two brand-elicitation conditions was significant, as indicated by the significant interaction effect ($F_{1, 37} = 3\ 54$, $p < 05$) Moreover, the difference in the self-representations among respondents in the self-expression condition was significant ($F_{1, 37} = 5\ 16$, $p < 05$), indicating that the manipulation created a difference in the need to self-express

With regard to the main hypothesis, we argue that invoking personally relevant brands in the minds of the respondents weakens their preference for subsequently evaluated brands We operationalized the value placed on the target brands as (1) the absolute score of the brand perceived to be most personally relevant and (2) the point difference (or "distance") between the most relevant and second most relevant brand

Each of the 102 respondents evaluated brands in the five product categories, which yielded 490 ratings (20 missing data points) 234 in the high self-expression condition and 256 in the low self-expression condition The data show that respondents in the high self-expression condition, who were asked to articulate personally relevant brands, perceived the subsequently presented brands as being more similar in terms of their personal relevance than did those in the low self-expression condition, who were asked to identify brands relevant to their parents In particular, the ratings of the brand perceived to be personally most relevant were lower for respondents in the high self-expression condition than for those in the low self-expression condition (M = 45 1, SD = 23 0 vs M = 55 2, SD = 28 2, $F_{1, 100} = 7\ 96$, $p < 01$) This effect was consistent across all five product categories, as revealed by a nonsignificant interaction between the factors of interest and product category ($F_{4, 380} = 92$)

An additional measure of consumers' perceptions of brand relevance is the perceived distance between the most relevant and second most relevant brand Comparing consumer evaluations of their most preferred and second most preferred brand (in terms of personal relevance) offers a better indication of dispersion of preferences across the available brands To illustrate, consider the following two sets of ratings 50-50-0-0-0 and 45-15-15-15-10 If we consider only the highest rating, it seems that consumer preferences are stronger in the first scenario (50 > 45) However, the relative valuations of the brands in these sets suggest that consumer preference is likely to be stronger in the second scenario because one of the brands is preferred over the other by a higher margin (50 – 50 = 0 < 45 – 15 = 30) In this context, we interpret a greater difference between the two most preferred brands as an indication of stronger preferences

The data show that the distance between the highest rated and the second highest rated brands was smaller for respondents who were asked to articulate personally relevant brands than for respondents who were asked to articulate their parent's preferences (M = 20 7, SD = 27 7 vs M = 33 2, SD = 38 4, $F_{1, 100} = 7\ 29$, $p < 01$) This effect was consistent across all five product categories, as revealed by a nonsignificant interaction between the factors of interest and product category ($F_{4, 380} = 71$) This finding is consistent with the proposition that increasing the salience of personally relevant brands tends to weaken subsequent consumer brand preferences

Discussion

The data this experiment furnishes lend support to the proposition that increasing the prominence of self-expressive brands that are already a part of a consumer's identity is likely to weaken future brand preferences, as reflected in ratings of the personal relevance of these brands We also show that this effect is not limited to brands in the same product category but also can be caused by articulating self-expressive brands in unrelated product categories

An important aspect of the theory advanced in this research is that brands compete not only with other brands for a share of consumers' identity but also with nonbrand means of self-expression We argue that because self-concept operates on a more general level than brand-specific effects, consumers can express their identity through a variety of alternative means that go beyond brands Building on the notion that people's need for self-expression is finite, we posit that the availability of nonbrand means of self-expression can also weaken preferences for subsequently evaluated brands Thus, we predict that a person's brand preferences are a function of the self-expressive capacity of previously adopted nonbrand means of self-expression, such that increasing the salience of nonbrand means already used to express self-identity tends to decrease people's preferences for subsequently evaluated brands

Prior research has argued that certain brands are more likely to be used as means of self-expression than others (Aaker 1997, Katz 1960, Richins 1994) Building on this research, we distinguish two types of brand associations functional and symbolic Functional associations relate the meaning of the brand to functional aspects of the underlying product or service, such as physical characteristics, performance, and reliability, whereas symbolic associations add value beyond the intrinsic product attributes For simplicity, we refer to brands heavy on functional associations as functional brands and brands heavy on symbolic associations as symbolic brands.

In the context of our theorizing, the distinction between symbolic and functional brands implies that the identity saturation effects observed in the first experiment are likely to be a function of the self-expressive nature of the brands evaluated. Indeed, if the decline in the perceived brand relevance reported in the first experiment can be attributed to a decline in consumers' need for self-expression, we would expect this effect to be contingent on the degree to which brands enable consumers to express their identity. Thus, we predict that the decrease in brand preferences reported in the first experiment will be more pronounced in the context of symbolic than functional brands. This line of reasoning leads to the prediction that the impact of the availability of alternative means of self-expression on consumer preferences for brands is a function of the brands' self-expressive capacity, such that it will be more pronounced for symbolic than utilitarian brands. We test the validity of this proposition in the following experiment.

Experiment 2

Building on the findings from the first experiment, our goal in the second experiment is to investigate whether the strength of consumer brand preferences is a function of the availability of nonbrand means of self-expression. Experiment 2 also tests the strength of the identity saturation effect as a function of brands' ability to fulfill consumers' need for self-expression.

Method

Respondents, 104 participants in an executive seminar, were randomly assigned to one of two self-expression conditions. Respondents in the high self-expression condition were asked to write down their favorite sports teams, television shows, books, hobbies, and products. In contrast, respondents in the low self-expression condition were given an unrelated filler task that did not ask for the delineation of any personally relevant preferences.

In addition to manipulating the level of self-expression, we also varied the degree to which individual brands had the potential to fulfill people's need for self-expression. Following the initial task, respondents in both self-expression conditions evaluated brands in four of eight different product categories: sneakers (Nike, Adidas, Puma, Converse, and Reebok), knit shirts (Polo, Nautica, Abercrombie & Fitch, and Lacoste), jackets (The North Face, Timberland, Patagonia, and Columbia), watches (Seiko, Movado, Omega, and Rolex), soft drinks (Coke, Pepsi, and RC Cola), paper towels (Brawny, Bounty, and Scott), cereal (Kellogg's, General Mills, Post, Kashi, and Jewel), and sports drinks (Gatorade, Powerade, and SoBe). A pretest determined that consumers classify brands in the first four categories (sneakers, knit shirts, jackets, and watches) as primarily symbolic, whereas they classify brands in the remaining four categories (soft drinks, paper towels, cereal, and sport drinks) as primarily functional.

Each respondent evaluated brands in four product categories, all either symbolic or functional. The task was identical to the one used in the first experiment and required allocating 100 points across the available brands according to respondents' perceptions of the brands' personal relevance.

Results

We hypothesized that the strength of consumer brand preferences is influenced by the availability of nonbrand means of self-expression and that this effect is more pronounced for symbolic than functional brands. As in the first experiment, we operationalized brand value as (1) the absolute score of the brand perceived to be most personally relevant and (2) the point difference (distance) between the most relevant and second most relevant brand.

Each of the 104 respondents evaluated brands in four product categories, which yielded 411 ratings (5 missing data points): 201 in the high self-expression condition and 210 in the low self-expression condition. The data summarized in Table 1 show that respondents who were asked to

TABLE 1
The Effect of Self-Expression on Consumer Preferences for Symbolic and Functional Brands (Experiment 2)

Brand Type	Dependent Variable	Self-Expression High (Listing Favorites)	 Low (Filler Task)	 Effect
Symbolic	Personal relevance (absolute)	46.5 (n = 104, SD = 19.2)	63.4 (n = 99, SD = 22.7)	$F_{1,100} = 22.62$ $p < .001$
	Personal relevance (marginal)	17.6 (n = 104, SD = 25.6)	42.2 (n = 99, SD = 33.8)	$F_{1,100} = 24.87$ $p < .001$
Functional	Personal relevance (absolute)	51.9 (n = 97, SD = 18.7)	58.9 (n = 111, SD = 24.0)	$F_{1,100} = 3.90$ $p < .05$
	Personal relevance (marginal)	22.8 (n = 97, SD = 24.2)	33.9 (n = 111, SD = 34.5)	$F_{1,100} = 5.10$ $p < .05$
Combined	Personal relevance (absolute)	49.1 (n = 201, SD = 19.1)	61.0 (n = 210, SD = 23.4)	$F_{1,100} = 22.66$ $p < .001$
	Personal relevance (marginal)	20.2 (n = 201, SD = 25.1)	37.8 (n = 210, SD = 34.3)	$F_{1,100} = 25.97$ $p < .001$

Notes: Numbers in each cell represent the mean ratings of the brands across all product categories.

articulate their preferences before the evaluation task rated the brands as being less relevant both in terms of absolute ratings (M = 49 1 vs M = 61 0) and marginal ratings (M = 20 2 vs M = 37 8) than respondents in the control condition This effect was statistically significant ($F_{1, 100} = 22\ 66$, $p < 001$, and $F_{1, 100} = 25\ 97$, $p < 001$, respectively) and consistent across product categories, as revealed by a nonsignificant interaction between the factors of interest and product category ($F_{3, 295} = 56$ and $F_{3, 295} = 25$, respectively) These findings are consistent with the hypothesis that brand value, as measured by perceived brand relevance, is a function of the availability of nonbrand means of self-expression

The data further show that the self-expression task had a significant impact on the perceived brand relevance for both symbolic and functional brands For example, the absolute ratings of brand relevance in the high self-expression and low self-expression conditions were M = 46 5 and M = 63 4 for symbolic brands ($F_{1, 100} = 22\ 62$, $p < 001$) and M = 51 9 and M = 58 9 for functional brands ($F_{1, 100} = 3\ 90$, $p < 05$) The marginal ratings of brand relevance revealed the same pattern More important, the data show that the impact of the self-expression task on perceived brand relevance was a function of brand type Namely, the self-expression task had a greater impact on brand relevance for symbolic than functional brands, as indicated by both absolute and marginal measures of brand relevance ($F_{1, 100} = 3\ 96$, $p < 05$, and $F_{1, 100} = 3\ 83$, $p < 05$) These findings are consistent with the proposition that the identity saturation effects resulting from self-expression are more pronounced for symbolic than functional brands

Discussion

The data furnished by Experiment 2 lend further support to the proposition that increasing the prominence of self-expressive brands that are already a part of a consumer's identity is likely to weaken his or her future brand preferences In addition, the data show that this effect can be caused by nonbrand means of self-expression, such as listing favorite books and sports teams, and that it also stems from the self-expressive function of the brands, such that it is more pronounced for symbolic than functional brands

Considered together, the data from the first two experiments offer converging evidence that asking respondents to articulate personally relevant items (both brand and nonbrand) tends to result in greater indifference to brands in subsequent choice tasks An important issue that merits consideration is that in both experiments we manipulated the level of identity saturation by explicitly prompting respondents to articulate their preferences This raises the question whether the effects reported in the first two experiments would persist in a scenario in which people achieve identity saturation by simply expressing their preferences Experiment 3 addresses this question by investigating whether the mere act of evaluating personally relevant brands can weaken preferences for subsequently evaluated brands This proposition is based on the notion that evaluation itself can serve a self-expressive function (Kim and Drolet 2003, Kim and Sherman 2007) and, thus, that making multiple selections in personally relevant categories is likely to lead to identity saturation

The proposition that the mere act of evaluating a brand's personal relevance can lead to identity saturation is consistent with the data reported in the first experiment Indeed, the data collected in Experiment 1 show that the brands evaluated later in the set were more likely to be rated lower in terms of personal relevance than brands evaluated earlier in the set—an effect significant both in terms of absolute ($F_{1, 380} = 7\ 87$, $p < 01$) and relative ($F_{1, 380} = 5\ 25$, $p < 05$) measures of personal relevance

Although these data are consistent with the notion that the mere act of evaluating personally relevant brands can serve as a means of self-expression, they do not provide conclusive evidence Because brands were presented to all respondents in the same order, effects attributed to the presentation order were perfectly confounded with brand-specific effects Furthermore, one could argue that the decrease in brand relevance can be attributed to respondents simply becoming more tired (or ego depleted, see Baumeister, Smart, and Boden 1996) That is, the increase in respondents' indifference to brands evaluated later in the sequence could have been caused by resource depletion rather than identity saturation Thus, we predict that a person's brand preferences are a function of the self-expressive capacity of the previously considered brands, such that merely evaluating a self-expressive brand can lower consumer preferences for subsequently evaluated self-expressive brands Experiment 3 tests the proposition that the mere act of brand evaluation can serve a self-expressive function, while controlling for brand order and resource depletion effects

Experiment 3

Experiment 3 examines identity saturation effects naturally occurring in the process of product evaluations In particular, it tests the proposition that the mere act of evaluating a self-expressive brand can weaken consumer preferences for subsequently considered brands

Method

In this experiment, we presented respondents with a set of brands in different categories and compared their evaluations of brands considered at both the beginning and the end of the list To control for potential resource depletion effects, our design employed the following procedure First, we presented respondents with a list of 15 categories and asked them to identify the five most personally relevant and five least personally relevant ones Then, respondents were randomly assigned to one of two self-expression conditions Respondents in the high self-expression condition were given five sets of brands in categories identified by respondents as the most relevant, followed by five sets of brands with average relevance (those not identified either as most or least relevant) In contrast, respondents in the low self-expression condition were given five sets of brands identified as the least relevant, followed by five sets of brands with average relevance Because respondents in both conditions evaluated the same number of brands, any differences in their evaluations of the second group of brands (those with average relevance) could be attributed to identity expression effects caused by evaluating the first group of brands

Respondents were 109 students who were randomly assigned to either the high or low self-expression condition The experiment was conducted online, and the ten decision sets given to each respondent were dynamically generated according to their initial evaluation of the relevance of the available product categories The evaluation task involved rating the personal relevance of the brands in each product category (100-point allocation task) and measuring the perceived similarity of the available brands (100-point ungraded scale presented to respondents in the form of a slider with the endpoints "very similar" and "very dissimilar")

Results

As a manipulation check, we compared the brand relevance and similarity ratings in either the five high-relevance categories in the high self-expression condition or the five low-relevance categories in the low self-expression condition with the ratings in the five average-relevance categories in both conditions The data show that the manipulation had the predicted effect in both conditions, such that brands in the average-relevance categories were rated as less relevant than brands in the high-relevance categories and more relevant than brands in the low-relevance categories In particular, in the high self-expression condition, the brand-relevance ratings in the average-relevance categories were lower than those in the high-relevance categories (absolute ratings M = 40 1 vs M = 51 7, $F_{1, 465} = 39\ 11$, $p <\ 001$, marginal ratings M = 16 9 vs M = 29 6, $F_{1, 465} = 28\ 73$, $p <\ 001$) In the low self-expression condition, the brand-relevance ratings in the average-relevance categories were higher than those in the low-relevance categories (absolute ratings M = 52 5 vs M = 45 2, $F_{1, 421} = 8\ 74$, $p <\ 005$, marginal ratings M = 30 4 vs M = 20 3, $F_{1, 418} = 15\ 21$, $p <\ 001$)

We hypothesized that evaluating brands in personally relevant product categories would serve as a means of self-expression and, therefore, would weaken preferences for subsequently presented brands In contrast, we predicted that evaluating brands in categories that were perceived as less relevant would result in a less pronounced self-expression effect and, thus, have little or no impact on subsequent brand preferences Each of the 109 respondents evaluated brands in ten product categories, which yielded 1054 personal relevance ratings (552 in the self-expression condition and 502 in the control condition, with 36 missing observations) and 1074 similarity ratings (561 in the self-expression condition and 513 in the control condition)

The data summarized in Table 2 show that the ratings of the most personally relevant brand in the second group of brands (the five categories rated as having average personal relevance) were lower for respondents in the high self-expression condition, who were first asked to evaluate brands in the most relevant product categories, than for respondents in the low self-expression condition, who were first asked to evaluate brands in the least relevant product categories (M = 40 1 vs M = 52 5) This effect was statistically significant ($F_{1, 106} = 15\ 22$, $p <\ 001$) The marginal ratings displayed a similar pattern, indicating that respondents' preferences were weaker when the evaluation of brands in the average-relevance categories was preceded by evaluation of brands in self-expressive (personally relevant) categories (M = 16 9 vs M = 30 4, $F_{1, 106} = 11\ 41$, $p <\ 001$) The brand similarity ratings further show that respondents in the high self-expression condition perceived the available brands to be more similar to one another than respondents in the low self-expression condition (M = 35 9 vs M = 45 1, $F_{1, 107} = 7\ 12$, $p <\ 01$) All three measures were consistent across all five product categories, as revealed by nonsignificant interactions between the factors of interest and product category ($F_{4, 384} =\ 80$, $F_{4, 381} = 1\ 00$, and $F_{4, 393} = 1\ 21$, respectively)

Discussion

The data reported in Experiment 3 support the proposition that the mere act of evaluating a brand in a personally relevant product category can serve a self-expressive function, weakening people's preferences for subsequently evaluated brands Thus, respondents who were asked to evaluate brands in categories of greater personal relevance perceived the subsequently rated brands to be more similar in their personal relevance

The data from the three experiments reported so far are consistent with the proposition that the self-expressive value of a given brand tends to decrease as the number of alternative brand and nonbrand means of self-expression increases In particular, we varied the salience of brands that were already a part of consumers' identity and attributed the resulting changes in brand preferences to the

TABLE 2
The Effect of Self-Expressive Product Evaluations on Brand Preferences (Experiment 3)

	Self-Expression		
Dependent Variable	High (High Category Relevance)	Low (Low Category Relevance)	Effect
Personal relevance (absolute)	40 1 (n = 272, SD = 22 6)	52 5 (n = 248, SD = 27 7)	$F_{1, 106} = 15\ 22$ $p <\ 001$
Personal relevance (marginal)	16 9 (n = 272, SD = 27 4)	30 4 (n = 245, SD = 36 6)	$F_{1, 106} = 11\ 41$ $p <\ 001$
Perceived similarity	35 9 (n = 276, SD = 24 9)	45 1 (n = 254, SD = 26 6)	$F_{1, 107} = 7\ 12$ $p <\ 01$

Notes Numbers in each cell represent the mean ratings of the five target brands across all product categories Lower ratings indicate greater perceived similarity of the brands in the category degree to which consumers had already expressed their identity

An alternative and more direct approach to demonstrating the causal link between the degree of self-expression and the strength of brand preferences is to vary consumers' need for self-expression We argue that the decline in the strength of consumer brand preferences stems from a decline in the need for self-expression because of the availability of alternative means of expressing identity Following this line of logic, we would expect that increasing consumers' need for self-expression would have the opposite effect of strengthening their brand preferences

One approach to increasing people's need for self-expression is to introduce a threat to their self-identity (Berger and Heath 2007, Escalas and Bettman 2005, Wicklund and Gollwitzer 1981) Consistent with this approach, previous research has shown that brands can be valued as a way of making up for deficiencies in a self-concept—a way of symbolically completing the self For example, MBA students aspiring to be perceived as "successful" business people were more likely to wear business-appropriate attire, including luxury watches and other accessories, than students who had already achieved some objective degree of success (Wicklund and Gollwitzer 1981) Likewise, among a sample of self-identified "committed" tennis players, beginners were much more likely to prefer specific brands of clothing when they played relative to those with several years of experience, who had weaker clothing brand preferences (Braun and Wicklund 1989) In this context, we predict that the presence of a threat to people's identity will increase their need for self-expression and strengthen their brand preferences, attenuating the identity saturation effect observed in the first three experiments Therefore, we predict that the impact of the availability of alternative means of self-expression on consumer preferences for self-expressive brands is a function of people's need to express their identities, such that it will be more pronounced when the need for self-expression is high We test the validity of this prediction in Experiment 4

Experiment 4

Experiment 4 tests the hypothesis that the impact of alternative means of self-expression on brand preferences is a function of a person's need for self-expression In particular, we manipulated people's need for self-expression by providing feedback that was either consistent or inconsistent with their self-image and examined its impact on subsequent brand preferences

Method

Respondents were 122 students recruited to participate in the experiment They were initially given a set of self-expressive questions asking them to identify their favorite color, sport teams, music group, hobby, television show, book, subject at school, and movie Following the initial self-expressive task, respondents were informed that their preferences were either very unique (identity-validation condition) or very similar to those of the other respondents (identity-threat condition) The premise was that respondents in the identity-threat condition would have a greater need to express their identity than those in the identity-validation condition (Berger and Heath 2007, Brewer 1991, Escalas and Bettman 2005, Rucker and Galinsky 2008)

Next, all respondents were given the same set of brand-choice questions in four categories sunglasses (Oakley, Foster Grant, Revo, Fossil, and Ray-Ban), knit shirts (Polo, Nautica, Abercrombie & Fitch, Lacoste, and Izod), pens (Montblanc, Parker, uni-ball, Pilot, and Office Depot), and jackets (The North Face, Timberland, Patagonia, Columbia, and Mountain Hardwear)

In each category, respondents were asked to indicate (1) the personal relevance of each brand by allocating 100 points across all brands, (2) the degree to which the available brands were similar to one another (using a 100-point nongraded slider with the endpoints "very similar" and "very dissimilar"), and (3) the amount of money they were willing to pay for each of the available brands These three measures served as the operationalization of the strength of brand preferences The first two measures were similar to those used in the first three experiments We measured the impact of the need for self-expression on respondents' willingness to pay by comparing the amount of money respondents were willing to pay for their most preferred brand and the premium they were willing to pay for their most preferred brand over their second most preferred brand

Results

We argue that the strength of people's brand preferences is a function of the need for self-expression In particular, we hypothesize that respondents in the identity-threat condition were likely to display stronger preferences when evaluating the individual brands than those in the identity-validation condition The data summarized in Table 3 confirm our hypotheses, showing that respondents in the identity-threat condition displayed stronger brand preferences, as indicated by the dispersion of their personal relevance brand rankings, brand similarity ratings, and willingness to pay for their most preferred brand To illustrate, respondents who were told that their preferences were similar to those of others (identity-threat condition) rated their most relevant brand more highly than those who were told that their preferences were unique (identity-validation condition) (M = 54 1 vs M = 42 1, $F_{1, 120}$ = 21 70, $p <$ 001) The effect was consistent across categories, although it seemed to be stronger in some categories, as indicated by a significant interaction between factors of interest and product category ($F_{3, 348}$ = 4 20, $p <$ 01)

The willingness-to-pay data summarized in Table 4 show that varying the need for self-expression had a significant impact on respondents' willingness to pay for the available brands For example, respondents in the identity-threat condition were willing to pay on average $133 25 for a sport jacket, whereas those in the identity-validation condition were willing to pay only $99 20 Furthermore, respondents in the identity-threat condition were willing to pay an average premium of $43 33 for their most preferred brand (over what they would pay for their second most preferred brand), whereas those in the identity-validation condition were only willing to pay an average premium of $18 48

TABLE 3
The Effect of Self-Expression and Identity Threat on Brand Preferences (Experiment 4)

	Need for Self-Expression		
Dependent Variable	**High (Identity Threat)**	**Low (Identity Validation)**	**Effect**
Personal relevance (absolute)	54 1 (n = 231, SD = 23 2)	42 1 (n = 245, SD = 22 7)	$F_{1, 120}$ = 21 70 p < 001
Personal relevance (marginal)	28 3 (n = 231, SD = 32 3)	17 0 (n = 245, SD = 25 8)	$F_{1, 120}$ = 17 21 p < 001
Perceived similarity	45 5 (n = 231, SD = 24 4)	38 1 (n = 245, SD = 22 8)	$F_{1, 120}$ = 7 84 p < 01
Willingness to pay for the most preferred brand	$82 99 (n = 229, SD = 79 5)	$60 25 (n = 238, SD = 66 9)	$F_{1, 119}$ = 6 86 p < 01
Premium willing to pay for the most preferred brand	$25 83 (n = 229, SD = 41 2)	$16 75 (n = 238, SD = 35 1)	$F_{1, 119}$ = 5 42 p < 05

Notes Numbers in each cell represent the mean brand relevance, similarity, and willingness to pay across all product categories Lower ratings indicate greater perceived similarity of the brands in the category

TABLE 4
The Effect of Self-Expression and Identity Threat on Consumer Willingness to Pay (Experiment 4)

	Need for Self-Expression		
Product Category	**High (Identity Threat) $**	**Low (Identity Validation) $**	**Effect**
Jackets	133 26 (43 33)	99 20 (18 48)	25 6 (57 4)
Pens	45 31 (20 46)	26 79 (16 82)	40 9 (17 8)
Knit shirts	66 57 (17 59)	48 64 (9 39)	26 9 (46 6)
Sunglasses	87 12 (22 10)	67 32 (22 38)	22 7 (–1 3)
Overall	82 99 (25 83)	60 25 (16 75)	27 4 (35 1)

Notes Numbers in each cell indicate respondents' willingness to pay for the most preferred item The price premium over the next most preferred brand is in parentheses

Discussion

The data reported in this experiment lend further support to the notion that the strength of people's brand preferences is a function of their need for self-expression In particular, we show that decreasing the need for self-expression (e g , by validating people's unique identity) tends to weaken their brand preferences, whereas increasing their need for self-expression (e g , by threatening their identity) has the opposite effect of strengthening their brand preferences

The data show convergence across all three of the experiment's measures—personal brand relevance, perceived brand similarity, and willingness to pay—which enhances the validity of the observed effects Because personal relevance, perceived similarity, and willingness to pay represent different aspects of consumers' brand preferences, the findings suggest that the observed impact of identity saturation on brand value is not contingent on the instrument used but rather reflects a more fundamental pattern of consumer information processing

The data from this experiment lend further support to the notion that a person's need for self-expression can be satiated through various means In particular, it could be argued that the identity saturation manipulation used in some of the previous experiments might have inadvertently changed the way people evaluated different brands Thus, listing items that are most identity relevant might have made subsequently listed brands less identity relevant by comparison This argument might apply to the first two experiments, which ask respondents to generate identity-relevant lists of items, and to a lesser degree to the third experiment, in which identity saturation follows from respondents' evaluation of self-relevant brands Experiment 4 controls more directly for the possibility that people differentially weight subsequently evaluated brands Indeed, in this experiment, all respondents were asked to articulate their preferences, so any change m the importance of the sequentially evaluated brands would have been consistent across conditions

In general, we argue that because people's need for self-expression is finite, the value they derive from brands decreases as their need for self-expression is satiated The first four experiments tested this proposition by increasing the salience of self-expressive aspects of respondents' identity, such as their favorite brands, music, sports teams, and hobbies Rather than increasing the prominence of an already established aspect of a person's identity, an alternative approach to examine the boundaries of self-expression is to actively engage people in a self-expressive activity Indeed, our theorizing predicts that engaging in self-expressive acts—including decorating a house, creating a movie for YouTube, and customizing a product—would temporarily satiate people's need for self-expression, which in turn is likely to weaken their preferences for subsequently evaluated brands In this context, we argue that people's brand preferences are a function of the extent to which they have engaged in self-expressive behavioral acts, such that self-expressive actions tend to decrease consumer preferences for subsequently evaluated brands. We test this prediction in the following experiment.

Experiment 5

Experiment 5 aims to provide further evidence for the proposition that people's need for self-expression through brands is finite. We do so by engaging respondents in self-expressive behavior and examining its impact on their subsequent reliance on brands to express their identity.

Method

Respondents, 87 adult consumers participating in an online research panel, completed two ostensibly unrelated tasks. The first task involved designing a T-shirt using Blue Cotton's online T-shirt design studio (BlueCotton.com). After selecting a T-shirt color, participants were able to customize their T-shirts by adding text, numbers, shapes, and pictures from an extensive selection of clip art organized by category (e.g., occupations, music, animals). Design elements could be added to both the front and back of the shirt. Participants could customize the color, size, location, and orientation of each element and were even able to add visual effects, such as distressing. To manipulate people's need for self-expression, some of the participants were asked to design a shirt for themselves (high self-expression condition), whereas others were asked to design a T-shirt for a parent (low self-expression condition).

Following the product customization task, all respondents were given a set of brand evaluation questions in six categories: sunglasses (Oakley, Foster Grant, Revo, Fossil, and Ray-Ban), knit shirts (Polo, Nautica, Abercrombie & Fitch, Lacoste, and Izod), backpacks (The North Face, JanSport, Columbia, Mountain Hardware, and Timbuk2), pens (Montblanc, Parker, uni-ball, Pilot, and Office Depot), jackets (The North Face, Timberland, Patagonia, Columbia, and Mountain Hardwear), and watches (Movado, Swatch, Rolex, Seiko, and Omega). In each category, respondents indicated (1) the personal relevance of each brand by allocating 100 points across all brands, (2) the degree to which the available brands were similar to one another, and (3) the amount of money they were willing to pay for each of the available brands. These three questions were identical to the ones used in Experiment 4.

As an additional measure of brand relevance, we examined the closeness of the self-reported relationship people had to their most preferred brand from the available set. To that end, we developed a specialized scale, which we refer to as the Brand Closeness Scale. Derived from the Inclusion of Other in the Self scale (Aron, Aron, and Smollan 1992), this scale provides a more direct measure of the impact of identity saturation on people's relationship with the subsequently presented brands. The use of this scale to measure a brand's personal relevance is further supported by the growing body of research suggesting that brand relationships bear striking similarities to interpersonal relationships (Aaker, Fournier, and Brasel 2004; Fournier 1998). The Brand Closeness Scale consists of seven pairs of partially overlapping circles. Respondents were asked to select the pair that best represented their relationship with their most preferred brand in each category.

After completing the brand evaluations, participants were asked a set of three questions designed to measure their need for self-expression. Respondents used a five-point scale (1 = "strongly disagree" to 5 = "strongly agree") to assess the following items: "I would like to be perceived as different from the general population", "I often purchase products that let me express my uniqueness", and "It is important for me to be able to express my identity." We used participants' responses on these scales to check the effectiveness of the self-expression manipulation. Thus, we expected respondents in the high self-expression condition (designing a T-shirt for self) to display lower subsequent need for self-expression compared with respondents in the low self-expression condition (designing a T-shirt for a parent). The manipulation check was conducted at the end of the experiment to ensure that it did not influence people's responses to the key dependent measures.

Results

To test the effectiveness of the manipulation procedure, we examined participants' responses on the three-item scale measuring the need for self-expression. The responses were highly correlated ($\alpha = .76$), so we averaged the three responses to form a single indicator of the need for self-expression. The manipulation check data revealed that participants in the high self-expression condition, who designed a T-shirt for themselves, displayed lower subsequent need for self-expression ($M = 3.24$) than those in the low self-expression condition, who designed a T-shirt for a parent ($M = 3.73$, $F_{1, 80} = 6.57$, $p < .05$). These findings indicate that the manipulation procedure (customizing a T-shirt for self vs. a parent) was successful in creating different levels of identity saturation and thus different levels of need for self-expression among respondents.

We theorized that the strength of people's brand preferences is a function of their need for self-expression. In particular, we expected that respondents in the high self-expression condition, who designed a T-shirt for themselves, were likely to display weaker subsequent brand preferences than those in the low self-expression condition, who designed a T-shirt for a parent. The data summarized in Table 5 are consistent with this prediction. In particular, the data show that (compared with those in the low self-expression condition) respondents in the high self-expression condition (1) regarded their most preferred brand as having lower personal relevance, in terms of both absolute and marginal (the difference between the most preferred and the next most preferred brand) ratings, (2) perceived their relationship with the preferred brand to be more distant, (3) perceived the brands in the choice set to be more similar to one another, and (4) were willing to pay less for their preferred brand in terms of both the absolute dollar amount and the premium over the next most preferred brand.

To illustrate, respondents in the high self-expression condition rated their most relevant brand lower than those in the low self-expression condition in terms of both their

TABLE 5
The Effect of Self-Expression Product Customization on Brand Preferences (Experiment 5)

	Need for Self-Expression		
Dependent Variable	**High (Design T-Shirt for Self)**	**Low (Design T-Shirt for Other)**	**Effect**
Personal relevance (absolute)	38 5 (n = 250, SD = 20 7)	55 6 (n = 261, SD = 25 4)	$F_{1, 85}$ = 23 50 $p <$ 001
Personal relevance (marginal)	15 0 (n = 248, SD = 22 6)	31 2 (n = 260, SD = 33 5)	$F_{1, 85}$ = 17 00 $p <$ 001
Closeness of relationship with most preferred brand	2 7 (n = 248, SD = 1 5)	3 2 (n = 261, SD = 1 6)	$F_{1, 85}$ = 4 98 $p <$ 05
Perceived similarity	33 7 (n = 248, SD = 20 7)	46 6 (n = 261, SD = 24 4)	$F_{1, 85}$ = 20 76 $p <$ 001
Willingness to pay for the most preferred brand	$73 41 (n = 248, SD = 125 0)	$111 26 (n = 261, SD = 154 7)	$F_{1, 85}$ = 5 89 $p <$ 05
Premium willing to pay for the most preferred brand	$27 08 (n = 248, SD = 108 8)	$57 33 (n = 261, SD = 122 6)	$F_{1, 85}$ = 6 95 $p <$ 01

Notes Numbers in each cell represent the mean brand relevance, relationship closeness, similarity, and willingness to pay across all product categories Higher relationship closeness ratings indicate greater perceived closeness between the self and the most preferred brand Lower similarity ratings indicate greater perceived similarity of the brands in the category

absolute (M = 38 5 vs M = 55 6, $F_{1, 412}$ = 23 50, $p <$ 001) and marginal (M = 15 0 vs M = 31 2, $F_{1, 85}$ = 17 00, $p <$ 001) ratings Furthermore, participants in the high self-expression condition rated their relationship with the most preferred brand to be more distant than those in the low self-expression condition (M = 2 7 vs M = 3 2, $F_{1, 85}$ = 4 98, $p <$ 05) In the same vein, respondents in the high self-expression condition perceived the available brands to be more similar than those in the low self-expression condition (M = 33 7 vs M = 46 6, $F_{1, 85}$ = 20 76, $p <$ 001)

The willingness-to-pay data further show that engaging in a self-expressive act has a significant impact on respondents' willingness to pay for their most preferred brand Respondents in the high self-expression condition were willing to pay on average $73 41 for their most preferred brands, whereas those in the low self-expression condition were willing to pay on average $111 26 ($F_{1, 85}$ = 5 89, $p <$ 05) Furthermore, respondents in the high self-expression condition were willing to pay only a $27 08 premium for their most preferred brand, significantly less than those in the low self-expression condition, who were willing to pay a premium of $57 33 ($F_{1, 85}$ = 6 95, $p <$ 05) These findings are consistent with the experimental predictions

Because the willingness-to-pay-data were category specific (e g , across conditions, respondents were willing to pay more for a jacket than a pen), we report the per-category effects in Table 6 by category To illustrate, respondents in the high self-expression condition were willing to pay on average $58 00 for a pair of sunglasses, whereas those in the low self-expression condition were willing to pay $72 57 Furthermore, respondents in the high self-expression condition were willing to pay an average premium of $17 98 for their most preferred brand over their second most preferred brand, whereas those in the low self-expression condition were willing to pay an average premium of $29 80 There was a significant main effect of product category on the willingness-to-pay measures (absolute willingness to pay $F_{5, 508}$ = 23 94, $p <$ 001, marginal willingness to pay $F_{5, 508}$ = 11 08, $p <$ 001) The effects were consistent across product categories, as indicated by the nonsignificant interactions between product category and the experimental manipulation (absolute willingness to pay $F_{5, 508}$ = 2 11, marginal willingness to pay $F_{5, 508}$ = 1 20)

Discussion

The data reported in this experiment provide further support for the notion that the strength of people's brand prefer-

TABLE 6
The Effect of Self-Expression Product Customization on Consumer Willingness to Pay (Experiment 5)

	Self-Expression		
Product Category	**High (Design T-Shirt for Self) $**	**Low (Design T-Shirt for Other) $**	**Effect**
Sunglasses	58 00 (17 98)	72 57 (29 80)	20 1 (39 7)
Knit shirts	40 19 (8 93)	57 61 (13 80)	30 1 (35 3)
Backpacks	79 52 (24 17)	82 07 (31 16)	3 1 (22 4)
Pens	20 12 (11 81)	74 67 (60 21)	73 1 (80 4)
Jackets	87 65 (16 63)	117 33 (56 91)	25 3 (70 8)
Watches	159 75 (85 25)	266 12(154 37)	40 0 (44 8)
Overall	73 41 (27 08)	111 26 (57 33)	34 0 (52 8)

Notes Numbers in each cell indicate respondents' willingness to pay for the most preferred item The price premium over the next most preferred brand is in parentheses ences is a function of their identity saturation In particular, we show that self-expressive behaviors tend to weaken subsequent brand preferences This finding extends the results reported in Experiments 1–4 by demonstrating the impact of identity saturation on brand preferences as a direct result of self-expressive acts We document these effects across all three key dependent variables used in the first four experiments personal brand relevance, perceived brand similarity, and willingness to pay

This experiment provides further support to our theory by using a measure of a brand's proximity to the self as an additional, and perhaps more direct, measure of a brand's personal relevance In this context, we show that identity saturation is likely to lead to a greater perceived distance between a person's self and his or her preferred brands Consistent with the proposition that the need to express the self is finite, we show that participants engaging in highly self-expressive acts were less likely to incorporate preferred brands into their self-concept

The data reported in this experiment lend further support to the notion that self-expression can be satiated through any number of means The previous studies reveal that the need for self-expression can be saturated by generating self-relevant information from memory (Experiments 1, 2, and 4) and even by simply evaluating a list of brands (Experiment 3) Building on these findings, Experiment 5 shows that self-expressive behaviors, such as product customization, can satiate a person's need for self-expression, weakening brand preferences The use of an actual product-customization task provides further evidence for the external validity of the observed identity saturation effect

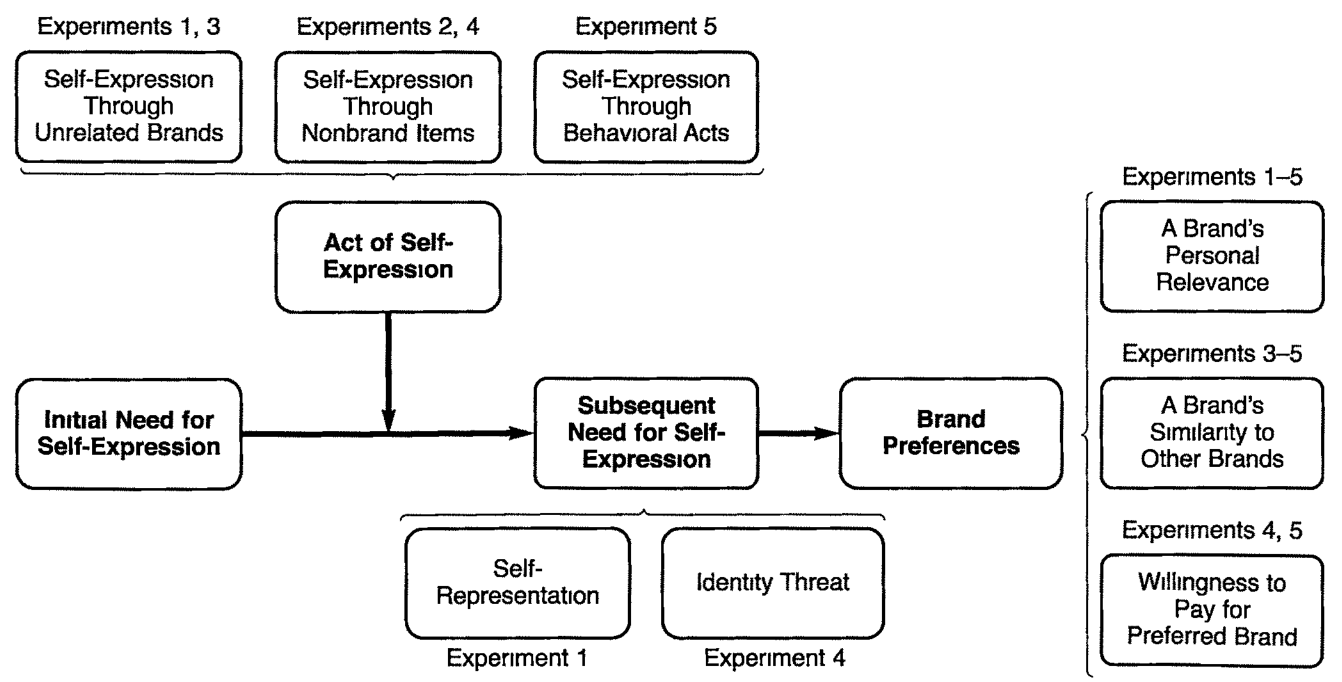
General Discussion

Theoretical Contribution

This research offers empirical evidence that a person's need for self-expression is finite and the preference for self-expressive brands is contingent on the availability of alternative means of self-expression In particular, we show that increasing the prominence of self-expressive brands that are already a part of a consumer's identity is likely to weaken their brand preferences in the immediate future We further show that this effect is not limited to brands in the same product category but can be activated by identifying self-expressive brands in unrelated product categories (Experiment 1) We show that nonbrand means of self-expression, such as listing favorite books or television shows, can also cause identity saturation and are likely to have a greater impact on symbolic than functional brands (Experiment 2) In addition, our findings reveal that the mere act of evaluating personally relevant brands can serve a self-expressive function, weakening consumers' preferences for subsequently evaluated brands (Experiment 3) We further show that decreasing people's need for self-expression (e g , by validating their unique identity) tends to weaken their brand preferences, whereas increasing their need for self-expression (e g , by threatening their identity) has the opposite effect of strengthening their brand preferences (Experiment 4) Finally, we show that self-expressive behavioral acts, such as product customization, can lead to identity saturation, weakening consumers' brand preferences (Experiment 5)

Figure 1 illustrates the overall experimental paradigm and the contribution of individual experiments to testing our

FIGURE 1
Overview of the Experiments


Experiments 1, 3
Self-Expression Through Unrelated Brands
Experiments 2, 4
Self-Expression Through Nonbrand Items
Experiment 5
Self-Expression Through Behavioral Acts
Act of Self-Expression
Initial Need for Self-Expression
Subsequent Need for Self-Expression
Brand Preferences
Self-Representation
Experiment 1
Identity Threat
Experiment 4
Experiments 1–5
A Brand's Personal Relevance
Experiments 3–5
A Brand's Similarity to Other Brands
Experiments 4, 5
Willingness to Pay for Preferred Brand

Notes Boxes in bold represent the hypothesized process The nonbold boxes represent empirical operationalizations of the independent and dependent variables in each experiment Identity saturation occurs when a self-expressive act results in a lower subsequent need for self-expression theoretical predictions We measure respondents' need for self-expression by introducing a self-expression manipulation using unrelated self-expressive brands (Experiments 1 and 3), nonbrand self-expressive items (Experiments 2 and 4), and self-expressive behavioral acts (Experiment 5) We also measure (Experiment 1) and manipulate (Experiment 4) the need for self-expression to examine the impact of identity saturation on brand preferences We document the impact of self-expression on the strength of brand preferences using three complementary measures personal brand relevance (Experiments 1–5), brand similarity (Experiments 3–5), and willingness to pay (Experiments 4 and 5) The convergence of the data across different manipulations of the need for self-expression and different measures of brand preferences indicates that the observed effects are not contingent on the particulars of the experimental manipulations but rather reflect a more fundamental pattern of consumer information processing

From a theoretical standpoint, our research contributes to the self-identity literature by advancing the notion that people's need for self-expression is finite and that increasing the variety of means of self-expression can lower the self-expressive capacity of each individual item We further show that the need for self-expression can be satiated by means of different product categories and across consumption occasions

Our research further adds to the literature on satiation by documenting that satiation can occur across domains Thus, prior research has argued that past experience influences current evaluations when both are in the same category (Brown 1953, Epstein et al 1993, Kahneman and Miller 1986) and, as a result, satiation is domain specific For example, previous research has shown that in the food domain, satiation occurs within similar food categories rather than across all foods (Rolls, Rowe, and Rolls 1982) In contrast, we show that needs that are more fundamental in nature, such as the need for self-expression, can be satiated by means that extend beyond a specific category

We also show that satiation is not limited to the sensory aspect of the product experience (Inman 2001, Johnson and Vickers 1993) but extends to nonsensory features like brand meaning Sensory-specific satiety has been attributed to habituation, whereby frequent exposure to a stimulus decreases the magnitude of a person's response to it (Berlyne 1971, McSweeney and Swindell 1999, Raynor and Epstein 2001) Our research adds to this literature by documenting that satiation can occur on nonsensory dimensions, such as a person's need for self-expression

Managerial Implications

We argue that managers could benefit from expanding their understanding of the scope of brand competition to include the idea that brands can potentially compete across categories to become a part of a person's identity Conventional wisdom suggests that the strength of consumer brand preferences is a function of the relative strength of other brands in the same category In contrast, we propose that in the case of brands fulfilling a self-expressive need, consumer preferences are a function of the strength of the brands not only in the same category but also across categories and can include even nonbrand means of self-expression Thus, in the domain of self-expression, a cereal brand competes not only with other cereal brands but also with all brands with a self-expressive component, including apparel (e g , Ralph Lauren), electronics (e g , Apple), and sporting goods (e g , Nike)

Our theorizing offers important insights into the viability of lifestyle positioning as a brand differentiation strategy Lifestyle positioning has become an increasingly common approach among managers, especially in commodity categories in which functional differences are difficult to maintain Thus, in addition to brands positioned as lifestyle, such as Ralph Lauren, Abercrombie & Fitch, and Martha Stewart, several well-established brands, such as Gillette, Dove, Montblanc, Oakley, and Quiksilver, have transitioned from being performance focused to lifestyle oriented To many managers, lifestyle brands seem to offer a way of breaking free of the cutthroat competition within a category by connecting with consumers on a more personal level However, we argue that the open vistas of lifestyle branding may be an illusion Managers may be trading fierce within-category functional competition for fierce across-category symbolic competition whereby all self-expressive brands could end up competing with one another Moreover, these brands might be competing with an increasing number of nonbrand self-expressive items, in addition to self-expressive behaviors that include social media websites (e g , Facebook), product customization websites (e g , Nikeid com), and even self-expressive self-customization websites (e g , SecondLife com) Thus, by switching from functional branding to lifestyle branding, managers might be setting themselves up for even stronger competition for a share of consumers' identity

In general, identity saturation can influence brand preferences in two ways First, exposure to a self-expressive brand can lead to a short-term saturation of the need to self-express, thus decreasing the strength of a consumer's preference for additional self-expressive brands For example, a consumer who has purchased a self-expressive brand is less likely to purchase or less willing to pay a premium for another self-expressive brand In addition, cumulative exposure to self-expressive brands over time could decrease consumers' willingness to relate to additional self-expressive brands For example, the adoption of a self-expressive brand (e g , Apple, Giorgio Armani, Porsche) might satiate a consumer's further need for self-expression, thus decreasing preferences for additional self-expressive brands

Although both the short- and long-term impact of identity saturation on brand preferences is important to companies, investigating how the change in short-term preferences translates into longer-term shifts in consumer preferences merits special attention Indeed, while the immediate impact of identity saturation on brand preferences is likely to influence consumer choices in the short term, the long-term impact of identity saturation is likely to influence the degree to which a brand is internalized by consumers, becoming an integral part of their identities The latter is also important because it is typically viewed as the key source of brand power and brand equity

Our research empirically examines the short-term effect of identity saturation on brand preferences. In this context, it offers guidance to marketing managers in many of their decisions regarding the immediate settings in which customers interact with brands. For example, this research offers an additional point of consideration when deciding where to locate a retail store. Should the store be located near other stores that could remind consumers of other preferred brands? Although there are benefits to locating in a busy shopping mall (e.g., customer traffic), our research suggests that surrounding consumers with salient reminders of other brands they value may decrease their preference and willingness to pay for any particular brand. Thus, although a store located next to an Apple store may benefit from increased traffic, it may also suffer from consumers whose need for self-expression has been satiated by whatever self-expressive gadget Apple has on display. Our research also has implications for managing consumers' point-of-purchase behavior. Our data suggest that marketers should exercise caution when engaging customers in self-expressive activities near the point of purchase, because such activities can lead to counterproductive outcomes, weakening consumers' brand preferences.

The finding that brand preferences are a function of the strength of brands in unrelated product categories and nonbrand means of self-expression has important implications for understanding and measuring the monetary value of the brand to a company. Most of the existing brand valuation methods incorporate the impact of the competition on the strength of each individual brand. However, when estimating the impact of the competition on the equity of a given brand, existing brand valuation methods typically define competition as a domain-specific phenomenon in which brands are primarily competing with other brands within the same product category. None of the existing methods for estimating brand equity take into account the effect that the self-expressive nature of brands in unrelated product categories can have, let alone the effect that the availability of nonbrand means of self-expression may have. This narrow definition of the competitive landscape is likely to lead to overestimation of brand equity. Incorporating the impact of a broader set of self-expressive means, which can have both short- and long-term effects, can contribute to more precise brand equity estimation and enable companies to build stronger brands by more effectively managing their self-expressive function. Thus, although this research empirically examines only the short-term effects of identity saturation, this effect might also have some long-term implications for managing brand equity that could be explored by further research.

Further Research

Our findings suggest multiple venues for further research. For example, researchers could investigate the duration of the identity saturation effect reported in this research. We examined the impact of identity saturation on brand preferences in the context of a single consumption episode without explicitly investigating the long-term dynamics of this effect. Thus, it is possible that the identity saturation observed in our experiments is transient in nature and will fade away over time. For example, prior research has shown that in sensory-specific domains such as food consumption, satiation effects fade away within a little more than an hour (Hetherington, Rolls, and Burley 1989). People's ability to "recover" from satiation with the passage of time has been documented in other domains as well (McSweeney and Swindell 1999, Thompson and Spencer 1966). This time-bound view of satiation is consistent with a model in which satiation is tied to depletion, whereby the satiated need is replenished over time (McAlister 1982, Vohs et al. 2008).

Another promising area for further research involves investigating the individual-specific factors that may moderate identity saturation. Factors that are likely to influence consumers' need for self-expression and the extent to which identity saturation will influence their brand preferences include the degree to which people strive to differentiate themselves from others and the degree to which they tend to rely on brands to self-express. In addition to investigating individual differences, further research might examine the dynamics of the need for self-expression throughout a person's lifetime. In this context, it is possible that the need for self-expression through brands is correlated with the formation of a self-concept, such that it is more pronounced during earlier stages of a person's life cycle and is relatively less prominent in the later stages. Moreover, it could be argued that brands adopted during the formation of a person's self-concept are more likely to have a greater self-expressive role and be more difficult to replace compared with brands adopted during later stages of the life cycle.

From a longitudinal perspective, we could further argue that the need for self-expression, though finite, remains more or less unchanged over time. This argument implies that although the number of self-relevant brands is likely to decrease over time, brand preferences for the most relevant brands are likely to strengthen over time. Thus, the need for self-expression might remain constant (and finite) over time but be fulfilled by fewer brands during the more advanced stages of a person's life cycle. In this context, investigating the long-term changes in consumers' need for self-expression over time and the boundaries to self-expression imposed by its finite nature can shed light on the interplay between short- and long-term effects of identity saturation on brand preferences.

Another venue for further research involves investigating the nature of the underlying need for self-expression through brands. In particular, brands can serve at least three self-expressive goals: to identify, to differentiate, and to assimilate. To illustrate, one consumer might adopt the Harley-Davidson brand (e.g., by purchasing a Harley-Davidson or wearing Harley-Davidson apparel) to identify himself with the free spirit that Harley-Davidson stands for, whereas another consumer might adopt the brand to differentiate herself from others by signaling nonconformity, and yet another consumer might adopt this brand to signal his belonging to the Harley-Davidson community. These three self-expressive motivations might also differ in the degree to which the self-expression is public or private. Indeed, when the goal is to identify, self-expression does not necessarily have to be public; it can be self-serving. In contrast, when the underlying motivation is to differentiate or assimilate, self-expression is more likely to be public and focused on a person's social surroundings Investigating the impact of self-expression on brand preferences as a function of the underlying goals (self-identification, differentiation, or assimilation) and the public nature of self-expression is a promising area for further research

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Zhenfeng Ma & Laurette Dubé

Process and Outcome Interdependency in Frontline Service Encounters

Although marketing researchers have emphasized the interactive nature of service encounters, there has been scant research regarding how dyadic behaviors in a service encounter are interrelated The authors recognize two distinct forms of dyadic interdependency process interdependency, in which each party's enactment of behavior influences the other's enactment of behavior, and outcome interdependency, in which the impact of each party's behavior on service outcome depends on the other party's behavior Using the interpersonal circumplex model and its related concept of complementarity, the authors examine both forms of dyadic interdependency by directly observing provider–client interpersonal behaviors in a natural frontline service setting over an extended period The findings on process interdependency indicate that dyadic behaviors elicit or inhibit each other largely in a complementary manner The findings on outcome interdependency show that, in general, complementary interactions between the provider and client enhance the client's satisfaction, whereas anticomplementary interactions dampen the client's satisfaction

Keywords frontline service encounters, dyadic interdependency, interpersonal complementarity

Business transactions often involve frontline service encounters, that is, the face-to-face interactions between clients and frontline employees ("providers") The interactions between a shopper and a salesclerk, a diner and a restaurant waiter, and a customer and a bank teller are all examples of frontline service encounters The quality of the interpersonal processes in a service encounter significantly affects various service outcomes, including client satisfaction (Bitner, Booms, and Tetreault 1990, Solomon et al 1985) Because the frontline service encounter is a dyadic and interactive process, the provider and client are interdependent in that each party's activity and experience influence, and are influenced by, the other's activity and experience The notion of dyadic interdependency is not new to marketing researchers, several studies have emphasized the interactive nature of service encounters and viewed the provider and client as cocreators of value (Neeli and Leone 2003, Solomon et al 1985, Vargo and Lusch 2004, Weitz 1981) However, the extant literature has not been informative on exactly how provider and client behaviors are interdependent

Because the service encounter is a multifaceted process, dyadic parties could be interdependent with regard to different aspects of the encounter Prior research on service encounters has distinguished between service outcome (i e , the subjective or functional end results) and service process (i e , how the end results are achieved) (Parasuraman, Zeithaml, and Berry 1985) It is plausible that provider and client behaviors are interdependent with regard to both service process and outcome Given the rule-based nature of service encounters (Solomon et al 1985), each party's enactment of behavior during the encounter would influence the other's enactment of behavior, resulting in process interdependency Moreover, because service outcome must be achieved through dyadic coordination, the effect of each party's behavior on service outcome would depend on the concomitant behavior of the partner, resulting in outcome interdependency

The extant literature does not distinguish between process and outcome interdependency, prior research has treated dyadic interdependency as a unitary construct without examining its typology (Solomon et al 1985) However, because process interdependency and outcome interdependency reflect two aspects of interpersonal dynamics, the conceptual distinction between them would enable researchers to examine service interactions from different angles Insights into each form of interdependency can be synthesized to build a more integrative model of frontline service encounters

In the sense that each party's enactment of behavior and the effect of that behavior on service outcome depend on the other's behavior, the notion of process–outcome interde-

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ISSN 0022-2429 (print), 1547-7185 (electronic)

pendency echoes a venerable stream of research based on the contingency view of service encounters (Weitz 1981) The contingency theory holds that no provider behaviors are universally effective because their impact on service outcome is contingent on contextual factors (Weitz 1981) Prior research based on the contingency theory has focused on the moderators that are antecedent to the service interactions, such as provider abilities, motivation, and role ambiguity (Román and Iacobucci 2010, Weitz 1981, Weitz, Sujan, and Sujan 1986) In contrast, the contingency factors that involve the interaction process, such as the properties of the dyadic behaviors, have received scant attention To the extent that the effect of a party's behavior on service outcome depends on the partner's behavior, contingency also operates within the interpersonal process Empirically verifying the within-process interdependency would expand the field's understanding of the contingency nature of service encounters

The theoretical development of dyadic interdependency is hindered by some methodological limitations in past research Prior studies on service encounters have focused on either the provider's (Comer and Drollinger 1999, Friedman and Churchill 1987) or the client's (Menon and Dubé 2000, Tax, Brown, and Chandrashekaran 1998) role With few exceptions (Román and Iacobucci 2010, Williams and Spiro 1985), little research has concurrently examined the behaviors of both parties Previous research has shown that for dyadic processes or relationships, concurrently examining the roles of both parties could offer important insights into the determinants of the interaction outcome (Frazier and Rody 1991, Solomon et al 1985) Research on dyadic interdependency is also hindered by limitations in behavior measurement Prior studies have measured dyadic exchange primarily through retrospective reports (Román and Iacobucci 2010, Williams and Spiro 1985), which often capture people's recollections of overall interaction style rather than the actual behaviors Because dyadic interdependency reflects behavioral contingency that unfolds during service interactions, it is necessary to adopt a measurement protocol that objectively quantifies the within-process dyadic behaviors

We use the interpersonal circumplex model (ICM) and its related concept of complementarity to examine process and outcome interdependency (Bakan 1966, Kiesler 1983) The ICM conceptualizes interpersonal behavior on two fundamental dimensions agency (dominant vs submissive) and communion (agreeable vs quarrelsome) This framework predicts that (1) in general, dyadic behaviors on both dimensions elicit or constrain each other in a complementary manner and (2) complementarity has predictable influence on interaction outcome Prior research on complementarity has been conducted mainly in lab settings (e g , Tiedens and Fragale 2003), and research in naturalistic contexts is scarce Partly because of this methodological orientation, prior research has focused on comparing the effect of experimentally induced dyadic patterns (e g , complementary vs anticomplementary patterns), but little research has examined how two parties' behaviors within a dyadic pattern alter each other's effect on interaction outcome Because complementarity reflects the relationship between dyadic behaviors, examining the interplay between the behaviors would provide fresh insights into how complementarity influences interaction outcome

The current study is an attempt to expand the understanding of the interdependent nature of frontline service encounters In contrast to prior research that treats dyadic interdependency as a unitary construct, the current study distinguishes between process interdependency and outcome interdependency Moreover, unlike prior research that measures interpersonal exchange through retrospective reports, we use a within-process, prospective study design in which interpersonal behaviors in a natural frontline service setting were directly observed and coded over an extended period The findings from our study provide empirical support for the existence of process and outcome interdependency The study also contributes to the contingency literature on service encounters because it provides initial evidence for the previously neglected within-process interpersonal contingencies Finally, the current study complements extant literature on interpersonal complementarity by showing how the interaction outcome can be affected by the interplay between two parties' behaviors that match or mismatch each other according to the principle of complementarity

Conceptual Background

Process Interdependency and Outcome Interdependency

Researchers have recognized that service encounters have both process and outcome components (Mohr and Bitner 1995, Parasuraman, Zeithaml, and Berry 1985) Broadly speaking, service outcome encompasses all results or consequences associated with the encounter, whether functional or experiential As a multifaceted construct, service outcome can be operationalized in either functional terms, such as timely delivery (Mohr and Bitner 1995), or subjective terms, such as evaluation and satisfaction The service outcome examined here is clients' satisfaction with the service encounter, a major success driver prior research has identified (Bitner, Booms, and Tetreault 1990) "Service process" refers to the manner in which the service transactions are accomplished (Mohr and Bitner 1995) Although service process encompasses both operational procedures and interpersonal exchange, we focus on provider–client interpersonal exchange

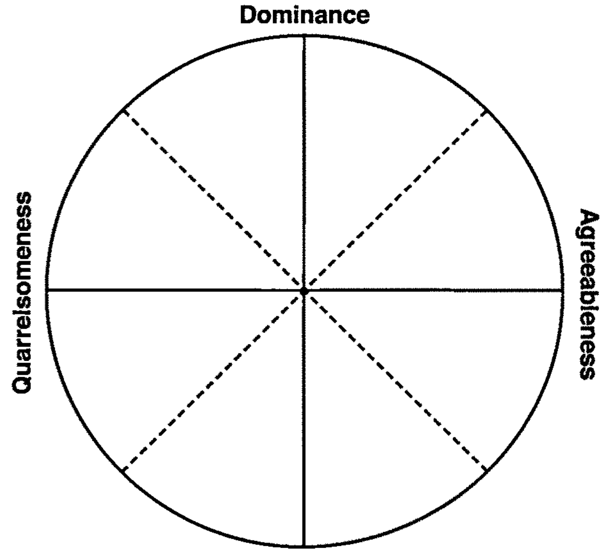
Given the distinction between service process and service outcome, two questions are central to understanding service encounters How does the interpersonal process unfold such that each party's behavior influences the other's behavior? and How is the impact of one party's behavior on client satisfaction contingent on the other's behavior? These two questions pertain to different forms of dyadic interdependency, which we refer to as process interdependency and outcome interdependency, respectively Process interdependency occurs when a party's enactment of behavior influences, and is influenced by, the other's behavior For example, the provider's friendly behavior (e g , complimenting) is likely to elicit friendly response and unlikely to elicit hostile response of the client Outcome interdependency occurs when the impact of one party's behavior on client satisfaction is dependent on the other's behavior For example, a restaurant waiter's recommendations for alternative beverages could increase the client's satisfaction if the client is unsure of his or her choice and asks for advice However, this same provider behavior could decrease client satisfaction if the client confidently and clearly indicates his or her preferences

Process and outcome interdependency partly stems from the purposive and rule-based nature of frontline service encounters Dyadic parties in a service encounter seek to fulfill both task- and relationship-oriented goals (Price, Arnould, and Tierney 1995) Task-oriented goals pertain to the fulfillment of functional duties (e g , timely order processing), whereas relationship-oriented goals pertain to the nurturance (or in rare cases, curtailment) of affiliative connections The interaction goals cannot be accomplished by one party's behavior but are fulfilled through a process of mutual adaptation, in which each party adjusts to the other's behavior according to shared interaction rules (Neeli and Leone 2003, Solomon et al 1985) Because of the goal-driven and rule-based nature of service encounters, provider and client behaviors should elicit or constrain each other in a predictable manner, resulting in process interdependency The frontline service encounter should also be characterized by outcome interdependency because the impact of a party's behavior on client satisfaction is influenced by the degree to which the dyadic behaviors jointly facilitate or hinder the client's goal attainment The examination of process and outcome interdependency requires a unified framework that makes provision for (1) the dyadic nature of service encounters, (2) the distinction between process and outcome interdependencies, and (3) the predictability of both forms of interdependency These criteria are satisfied by the ICM and its related concept of complementarity, which we detail in the following section

The ICM

The ICM recognizes agency and communion as two fundamental human needs, with agency reflecting a person's need for mastery and control and communion reflecting the need for affiliation with others (Bakan 1966, Wiggins 1991) According to the ICM, all interpersonal behaviors can be organized into a circle defined by agency and communion (Figure 1) Behaviors on the agency dimension range from submissiveness to dominance Examples of dominant behavior include voicing an opinion and asking others to do things (Moskowitz 1994) Examples of submissive behavior include giving in to others and avoiding being responsible In general, behaviors examined in the marketing domain, such as expert power behavior (Friedman and Churchill 1987) and control (Soldow and Thomas 1984), fall in the agency dimension Behaviors on the communal dimension range from quarrelsomeness to agreeableness Quarrelsome behaviors include, for example, criticizing and showing impatience, and sample agreeable behaviors include smiling and praising others (Moskowitz 1994) In general, specific behaviors or dispositions marketing researchers have examined, such as empathetic listening (Comer and Drollinger 1999), interaction-oriented behavior (Williams and Spiro 1985), and friendliness (Price and Arnould 1999), fall in the communal dimension The intermediate points on the ICM between the four traits can be defined to divide the interpersonal circle into segments Although the ICM has several variants, which differ in the number of segments divided and the labels assigned to different polar coordinates, researchers consider the quadrant model (Figure 1) a parsimonious framework for examining interpersonal behaviors in various contexts (Tracey 1994)

FIGURE 1
A Simplified Version of the Interpersonal Circumplex Model



Because each behavior represents a combination of varying degrees of agency and communion, the enactment of a behavior or exposure to others' behavior can facilitate or impede the fulfillment of a person's agentic or communal needs In general, the enactment of dominant and agreeable behaviors enhances a person's interaction experience, because such behaviors satisfy his or her agentic and communal needs Conversely, in general, the enactment of submissive and quarrelsome behaviors dampens a person's interaction experience, because such behaviors go against his or her agentic and communal needs (Moskowitz and Coté 1995) Similarly, in general, exposure to others' submissive and agreeable behaviors enhances a person's satisfaction (Hall and Horgan 2003), whereas exposure to others' dominance and quarrelsome behaviors dampens satisfaction (Newton and Bane 2001) However, these effects pertain to the basal effects of behavior—that is, the average effects when holding constant the partner's behavior As we discuss subsequently, the net impact of a party's behavior on interaction outcome is contingent on the other's behavior

The Concept of Complementarity

An important proposition underlying the ICM is that each party's behavior influences, and is influenced by, the other's behavior Thus, the ICM offers a useful basis for theorizing process interdependency. Patterns of process interdependency can be summarized by the principle of complementarity, which holds that every behavior conveys expectations regarding how others should respond. Dyadic interactions are complementary if the induced response fits the invitation implied by a behavior (Tracey 1994). Complementarity on the communal dimension is characterized by similarity. That is, agreeable behavior tends to invite an agreeable response but inhibits a quarrelsome response, whereas quarrelsome behavior invites a quarrelsome response but inhibits an agreeable response. Complementarity on the agency dimension is characterized by reciprocity. In other words, dominant behavior invites a submissive response but constrains a dominant response, whereas submissive behavior invites a dominant response but inhibits a submissive response (Kiesler 1983). Although dyadic interactions generally adhere to the principle of complementarity, the likelihood of complementarity can be influenced by intervening variables, such as the interaction setting, personality traits, and the relative status of dyadic parties (Bluhm, Widiger, and Miele 1990; Moskowitz, Ho, and Turcotte-Tremblay 2007). Situational contingencies could result in patterns of interactions that are inconsistent with the complementarity norm. An alternative class of dyadic patterns that is particularly pertinent to frontline service encounters is anticomplementary interactions, which occur when two parties act in ways that are opposite to the complementarity norm (e.g., when both parties act submissively).

The concept of complementarity also offers a useful perspective for examining outcome interdependency in frontline service encounters because complementarity (or anticomplementarity) can significantly influence the interaction outcome. Compared with alternative dyadic patterns, in general, complementary interactions enhance relationship harmony or work performance (Dryer and Horowitz 1997; Kiesler 1983; Tiedens and Fragale 2003; Tracey 1994). In contrast, anticomplementary interactions in general result in greater relationship stress and less satisfying interaction outcomes (Kiesler 1983; Tracey 1994).

Hypotheses

Process Interdependency

Because complementarity is a universally shared social norm necessary for fulfilling task- and relationship-oriented goals, in general, process interdependency in frontline service encounters should conform to the complementarity norm. The provider and client are motivated to maintain a positive relationship with each other (Price and Arnould 1999; Weitz 1981). Complementarity on the communal dimension is vital for fulfilling relationship-oriented goals (Bluhm, Widiger, and Miele 1990; Moskowitz 1994; Tracey 1994). Because the enactment of agreeable behavior signals a person's intention to maintain affiliative connections with others (Moskowitz 1994), the partner would respond with agreeable behavior to foster the intended connections and refrain from quarrelsome behavior to avoid straining the relationship. However, when a party feels the need to terminate affiliative connections with the other by acting quarrelsomely, the partner would respond with affiliation-denying (quarrelsome) behavior and refrain from affiliation-supporting (agreeable) behavior. Thus, we hypothesize the following on process interdependency in the communal dimension:

H_1: In a frontline service encounter, a party's agreeable (quarrelsome) behavior elicits agreeable (quarrelsome) response and inhibits quarrelsome (agreeable) response from the other.

The provider and client also need to complement each other on the agency dimension because agentic complementarity helps establish transient social hierarchy necessary for fulfilling task-oriented goals (Wiltermuth 2009). When a party acts submissively (e.g., asking for approval), the other's dominant response (e.g., giving permission) is necessary for the transactions to unfold smoothly. However, if the partner also acts submissively, it will be difficult for the service task to proceed. Thus, a party's submissive behavior would elicit dominant response but inhibit submissive response. When a party acts dominantly (e.g., making a request), the other's submissive response (e.g., doing as requested) would help fulfill the service task (Street and Wiemann 1987). Thus, a party's dominant behavior would elicit the other's submissive behavior. However, a party's dominant behavior would also elicit, rather than constrain, the other's dominant response. Expectation for this anticomplementary pattern stems from the dyad members' status perceptions in frontline service encounters. Unlike professional service encounters (e.g., doctor–patient encounters), frontline service encounters are characterized by small and ambiguous status difference between dyad members. On the one hand, the providers may view themselves as the primary agents of service delivery and assume status superiority over the clients. On the other hand, because the clients are often familiar with the service and have well-defined preferences, they may view themselves as equally knowledgeable regarding how the service should be delivered. Because of the self-superiority bias, each party may perceive him- or herself as more legitimate to exert control and act dominantly to the other's dominant behavior (Bluhm, Widiger, and Miele 1990). Thus, we hypothesize the following on process interdependency in the agency dimension:

H_2: In a frontline service encounter, a party's submissive behavior elicits dominant behavior and inhibits submissive behavior from the other, whereas a party's dominant behavior elicits both dominant and submissive behaviors from the other.

Outcome Interdependency

As we discussed previously, in general, individual behaviors have basal effect on client satisfaction because they support or suppress the client's agentic or communal needs. Given the goal-oriented nature of service encounters, client satisfaction would also depend on how well the concomitant behaviors of both parties help fulfill the client's task- and relationship-oriented goals (Czepiel et al. 1985; Solomon et al. 1985). If the fusion of two parties' behaviors facilitates the client's goal attainment, the service interactions would enhance client satisfaction, even if the basal effects of the behaviors are negative. Conversely, if the dyadic pattern impedes the client's goal attainment, the fusion of the two parties' behaviors would undermine client satisfaction, even if the basal effects of the behaviors are positive. Because complementarity is vital for fulfilling task- and relationship-oriented goals (Estroff and Nowicki 1992; Wiltermuth 2009), the fusion of two parties' behaviors could either enhance or dampen client satisfaction, depending on the complementarity of the interactions. Next, we detail our hypotheses on outcome interdependency in the two dimensions of the ICM.

The agency dimension. In task-oriented interactions requiring dyadic coordination, complementarity in the agency dimension facilitates task performance because the transient social hierarchy created by such interactions helps people more effectively coordinate activity (Tiedens, Unzueta, and Young 2007; Wiltermuth 2009). In contrast, anticomplementary interactions on the agency dimension impede task performance because such interactions inhibit effective coordination (Leavitt 2004; Wiltermuth 2009). An anticomplementary pattern occurs when both parties concurrently engage in submissive behavior. Submissive behavior is characterized by passiveness, avoidance, and lack of individual initiatives (Pearson, Watkins, and Mullan 2010). Although a party's submissive behavior is often necessary for task performance, both parties' concurrent submissive behavior would result in a state of mutual passiveness that impedes the client's task-oriented goals (Brown, Poole, and Rodgers 2004). As a result, the otherwise agency-supporting, positive basal effect of provider submissiveness on client satisfaction would be weakened, whereas the otherwise negative, agency-suppressing effect of the client's own submissive behavior would be intensified. Thus, interactions characterized by mutual submissiveness would decrease the client's overall satisfaction.

H_3: The co-occurrence of provider submissive behavior and client submissive behavior negatively affects the client's satisfaction.

When both parties concurrently engage in dominant behavior, the resulting anticomplementary interactions would also impede the client's service goals. Research has shown that in task-oriented interactions, both parties' expression of dominance results in poor task performance because such interactions inhibit the formation of transient social hierarchy necessary for effective dyadic coordination (Estroff and Nowicki 1992; Wiltermuth 2009). When provider dominant behavior and client dominant behavior co-occur, the potentially negative, agency-suppressing impact of provider dominance on client satisfaction would be intensified, whereas the potentially positive, agency-enhancing effect of client dominance would be weakened. Thus, this anticomplementary pattern of interactions would decrease the client's overall satisfaction.

H_4: The co-occurrence of provider dominant behavior and client dominant behavior negatively affects the client's satisfaction.

When acting submissively, the client conveys the willingness to concede control and expects the provider to take the initiative (Menon and Dubé 2000; Street and Wiemann 1987). Thus, the provider's complementary (i.e., dominant) response would help the dyad execute the service task in a manner that meets the client's expectation. Because the fusion of provider dominance and client submissiveness helps attain the client's service goals, the potential negative (basal) impact of each behavior on clients' service experience would be mitigated or even reversed, thus leading to increased client satisfaction.

H_5: The co-occurrence of provider dominant behavior and client submissive behavior positively affects the client's satisfaction.

Likewise, the fusion of provider submissive behavior and client dominant behavior also enhances client satisfaction. The client's dominant behavior conveys the client's need for status and for exerting control over the service transactions (Hui and Bateson 1991; Soldow and Thomas 1984). The provider's complementary (i.e., submissive) behavior not only supports the client's psychological need for status but also helps fulfill the client's goals for influencing the service transactions. Thus, when the client's dominant behavior co-occurs with the provider's submissive behavior, the positive basal effect of each behavior on client satisfaction would be intensified.

H_6: The co-occurrence of provider submissive behavior and client dominant behavior positively affects the client's satisfaction.

The communal dimension. Previous research has indicated that the development of positive relationships between dyadic parties requires reciprocal (i.e., complementary) exchange on the communal dimension. For example, Crosby, Evans, and Cowles (1990) find mutual assistance and mutual self-disclosure to be key antecedents to positive provider–client relationships. A pattern of interactions that directly violates the expectation for communal complementarity occurs when a client's agreeable behavior is met with a provider's quarrelsome behavior. In general, provider quarrelsome behavior, characterized by hostility or lack of concern for the client, dampens clients' service experience (Doucet 2004). Provider quarrelsome behavior would be particularly detrimental when the client acts agreeably because such behavior runs counter to the client's manifested affiliative goals (Kiesler 1983). Thus, when client agreeableness co-occurs with provider quarrelsomeness, the potential positive basal effect of client agreeableness would be weakened and the potential negative effect of provider quarrelsomeness would be intensified. As a result, client satisfaction would decrease.

H_7: The co-occurrence of provider quarrelsome behavior and client agreeable behavior negatively affects the client's satisfaction.

In general, both the client's and the provider's quarrelsome behavior tend to decrease client satisfaction because they both impede the client's communal needs. However, when these two behaviors increase concurrently, the total negative impact may not increase linearly with each party's quarrelsome behavior. The client's quarrelsome behavior signals his or her intent to curtail affiliations with the provider, which would be satisfied by the partner's quarrelsome response (Kiesler 1983, Tracey 1994) To the extent that the provider meets the client's expectation by acting quarrelsomely, the total negative impact of the two parties' quarrelsome behaviors on client satisfaction could be temporarily mitigated

H_8 When provider quarrelsome behavior and client quarrelsome behavior increase concurrently, the total negative impact of both parties' quarrelsome behavior on client satisfaction is mitigated

Both parties' reciprocal enactment of agreeable behavior facilitates the client's relational goals (Crosby, Evans, and Cowles 1990, Price and Arnould 1999) Thus, when provider and client agreeable behavior co-occur, the potential positive effect of each behavior on client satisfaction can be further enhanced, thus leading to greater client satisfaction

H_9 The co-occurrence of provider agreeable behavior and client agreeable behavior positively affects the client's satisfaction

Method

We tested the hypotheses using a prospective, within-episode design in which data on interpersonal behaviors and subsequent client satisfaction were collected over a series of service episodes in a natural frontline service setting This method strengthens causal inferences because it establishes temporal precedence between the interpersonal process and service outcome and, at the same time, permits aggregation of multiple service episodes related to a client (Brown and Moskowitz 1997) We measured interpersonal behaviors through direct observation, and we measured client satisfaction using clients' self-reports Compared with retrospective reports used in prior research, direct observation has several advantages for collecting interpersonal data First, this approach reduces common method bias and facilitates the distinction between process and outcome data Prior research has shown that people's perceptions of interpersonal behaviors could be biased by their satisfaction or dissatisfaction with the interactions (Dryer and Horowitz 1997) Thus, process data could be confounded with outcome data if both sets of data were obtained from the dyad's subjective reports[1] Second, while retrospective reports often reflect recollections of the dyad parties' overall interaction style, direct observation facilitates the examination of discrete behavior, which is the focal level of analysis for dyadic interdependency Our study design requires a field setting that allows observation in a reliable yet unobtrusive manner over a sufficient number of service episodes With these criteria, we chose the dining room of a geriatric health care facility in eastern Canada as the study setting Clients in this facility stay for four weeks on average and eat their meals in a common dining room A team of service employees serves standard portions of meals the clients have preselected We obtained measures of interpersonal behavior and client satisfaction for all three meals within a day, every other day of the client's stay, until the client checked out or for a maximum of six weeks We considered each meal a service episode, which on average lasted 32 minutes A total of 1477 episodes were observed, averaging 47 (SD = 27) episodes per client

Participants

Clients were elderly people admitted into the facility for rehabilitation from health problems such as hip fractures To ensure nonclinical status at both the cognitive and emotional levels, participants must have scores above 23 on the Mini-Mental Status Examination (Folstein, Folstein, and McHugh 1975) and below 9 on the Geriatric Depression Scale (Yesavage et al 1983) Of the 83 eligible clients admitted to the facility over the study period, 32 completed the study (21 women and 11 men, mean age = 79 years, SD = 7 years, all Caucasians), resulting in a participation rate of 39% Chief among the reasons for declining participation were unwillingness to have meals in the dining room, concurrent enrollment in other research projects, and the extended participation period required The eligible people who declined to participate did not differ from the participants in terms of the screening criteria The team of providers consisted of 25 service employees (21 women and 4 men), who worked on a rotating basis to provide meal services Typically, only one provider interacted with a client during a service episode However, in some service episodes, different providers interacted with the same client On average, 1 12 providers (SD = 95) interacted with a client during an episode Over the entire study period, a client interacted with an average of 14 (SD = 4) providers The institute's Research Ethics Committee approved the data collection protocol Provider and client participants were informed that their interactions would be observed by trained people during the study period and that the data would be used solely for research purposes

Measures of Interpersonal Behaviors

Trained observers monitored and coded the verbal and nonverbal behaviors of providers and clients over a series of two-minute observation intervals These observers were seated approximately two meters away from participants We selected this observation point to minimize the obtrusiveness of the observers' presence while keeping them within the hearing range of participants We instructed the observers to exercise great care in making the data collection as unobtrusive as possible Either one or two observers were present during an episode and a maximum of two clients could be monitored by an observer Within each episode, observers recorded an average of 4.40 intervals for a client.

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[1] In prior research, measurements of interpersonal behaviors were primarily based on dyad parties' retrospective self-reports For example, in a study that examined the impact of dyadic interactions on retail service outcome, Williams and Spiro (1985) measure dyad parties' communication style through the partner's postinteraction subjective reports Their use of self-reports as a method of collecting interpersonal data may partly explain why outcome interdependency did not emerge in the study Because a service encounter is often filled with subtle behaviors that unconsciously influence a person's interaction experience, retrospective reports may not be able to capture such influences due to incomplete or inaccurate recall

The observers coded dyadic behaviors using the Social Behavior Inventory (SBI, Moskowitz 1994), with minor modifications to suit the study context. The SBI consists of four subscales corresponding to the four interpersonal domains on the ICM. Dominance was sampled through such items as "made a suggestion." They measured submissiveness with items such as "did what the other asked." Examples of agreeable behavior included "expressed affection to the other with words or gestures." Quarrelsome behavior was represented by items such as "made a sarcastic comment." The SBI has consistently demonstrated good convergent and discriminant validity in prior studies (Moskowitz 1994). To minimize habitual response due to repeated use of the same coding form, we rotated three equivalent forms in a counterbalanced order over the three meal episodes within a day. Each form had a selection of 16 items (4 items for each interpersonal domain). The Appendix presents the full set of SBI items used here. Each observer received 30 hours of training that involved detailed discussion of all coding items and extensive coding practice using videos of client–provider interactions filmed in the actual setting. When training ended, interobserver reliability reached 85%–95%. As an additional check on interobserver reliability, two observers double-coded 36 episodes. The average interobserver agreement over the 36 episodes ranged from 85% to 90% across all interpersonal domains. Despite the reliability of the data, it seemed likely that there were differences in rates of checking items among the observers. To minimize differences among observers, we used ipsative frequency scores (Moskowitz 1994). We constructed an ipsative score by subtracting the mean of all scale scores from each scale score. For example, the ipsative score for dominance is dominance score – (sum of four scale scores)/4. Thus, an ipsative scale score reflects the frequency with which a behavior was endorsed after adjusting for the general rate of endorsement in an episode.

Measures of Client Satisfaction

We measured client satisfaction at the end of each service episode using a three-item semantic scale. Specifically, clients indicated the extent to which they (1) were satisfied with the personal interactions with the providers, (2) liked the attitude of the providers, and (3) were satisfied with the service received. Note that the first two items focus on client satisfaction with the personal interactions and the third one reflects clients' overall satisfaction with the service transactions. Thus, all three measures tap into the subjective (or attitudinal) dimension of service outcome. To minimize client burden, we obtained all satisfaction measures using a 15-centimeter visual analog with a sliding rule. Clients moved the sliding rule from 0 ("not at all") to 15 ("very much") to reflect their current level of satisfaction. Factor analysis on the three items yielded a single factor of satisfaction, which accounted for 74% of total variance. An average of the three items was used as an index of satisfaction ($\alpha = .84$).

Analyses and Results

Preliminary Analyses

We first assessed the reliability of the four interpersonal subscales using the corresponding item scores for each subscale. Because the frequency scores did not correlate with the coding form, we assessed reliability using pooled data across forms. Reliability was satisfactory for all subscales (dominance $\alpha = .85$, submissiveness $\alpha = .70$, agreeableness $\alpha = .77$, quarrelsomeness $\alpha = .62$). Thus, we indexed all subscales by the average scores of the corresponding items. Table 1 shows the mean frequency of provider and client behaviors for each subscale. We calculated these scores by dividing the total frequency of each subscale by the total number of observation intervals for the entire study period. Dominant behavior was the most frequently enacted behavior for both parties, followed by agreeable and submissive behavior. Quarrelsome behavior was the least frequently enacted. Paired samples t-tests showed that providers and clients were equally likely to engage in dominant and submissive behaviors. However, the providers engaged more frequently in agreeable behavior and less frequently in quarrelsome behavior than the clients.

Testing Process Interdependency

We examined the patterns of process interdependency using the correlations between provider and client behavior. Table 2 presents the correlation matrix on the agency and communal dimensions. Because our purpose is to examine the complementary patterns of dyadic behaviors, we focus on the correlations between dyadic behaviors within each dimension (shown in boldface in Table 2). A positive correlation coefficient in Table 2 indicates that one party's behavior tends to elicit the other's behavior, whereas a negative correlation indicates that one party's behavior tends to inhibit the other's behavior. On the communal dimension, a party's agreeable behavior elicits the other's agreeable behavior, as shown by the positive correlation between provider and client agreeable behaviors ($r = .50$). Likewise, a party's quarrelsome behavior elicits the other's

TABLE 1
Mean Frequency of Provider and Client Behaviors

	Dominant		Submissive		Agreeable		Quarrelsome	
	M	SD	M	SD	M	SD	M	SD
Client	$.94^{a}$	.38	$.40^{b}$	.22	$.59^{c}$	.29	$.11^{ac}$	.11
Provider	$.94^{a}$	.36	$.39^{b}$	.25	$.81^{d}$	.35	$.07^{ad}$	.06

Notes: Different superscripts indicate differences in cell means at the $\alpha = .05$ level according to paired t-tests.

TABLE 2
Correlations Between Client and Provider Behaviors

	Client Behaviors			
Provider Behaviors	**Dominant**	**Submissive**	**Agreeable**	**Quarrelsome**
Agreeable	–.09***	–.05*	**.50*** **	**–.26*** **
Quarrelsome	–.17***	–.02	**–.10** **	**.23*** **
Dominant	**.15*** **	**.26*** **	–.21***	–.19***
Submissive	**.14*** **	**–.17*** **	–.21***	.20***

*$p < .05$
**$p < .01$
***$p < .001$
Notes: N = 1477, and bold font indicates correlations between dyadic behaviors within each dimension.

quarrelsome behavior, as shown by the positive correlation between provider quarrelsomeness and client quarrelsomeness ($r = .23$). In contrast, a party's agreeable behavior inhibits the other's quarrelsome behavior, and vice versa, as shown by the negative correlation between provider agreeableness and client quarrelsomeness ($r = –.26$) and between provider quarrelsomeness and client agreeableness ($r = –.10$). Thus, consistent with H_1, a party's agreeable behavior elicits an agreeable response but inhibits a quarrelsome response, and a party's quarrelsome behavior elicits a quarrelsome response but inhibits an agreeable response.

On the agency dimension, a party's submissive behavior elicits the other's dominant behavior, and vice versa, as shown by the positive correlation between client submissiveness and provider dominance ($r = .26$) and between provider submissiveness and client dominance ($r = .14$). In contrast, a party's submissive behavior inhibits the other's submissive behavior, as shown by the negative correlation between the dyads' submissive behaviors ($r = –.17$). However, the correlation between provider dominance and client dominance is positive ($r = .15$), suggesting that a party's dominant behavior tends to elicit, rather than inhibit, the other's dominant behavior. This anticomplementary pattern is consistent with our expectation based on the status perceptions in frontline service encounters. Thus, consistent with H_2, a party's submissive behavior elicits dominant response but inhibits submissive response, and a party's dominant behavior elicits both dominant and submissive responses.

The cross-dimensions correlations between dyadic behaviors are also noteworthy, though they are not central to our research objectives. The negative correlations between provider dominance and client quarrelsomeness ($r = –.19$) and between client dominance and provider quarrelsomeness ($r = –.17$) suggest that one party's dominance tends to inhibit the other's quarrelsomeness, and vice versa. It is also notable that both types of provider behaviors on the agency dimension tend to inhibit clients' agreeableness (and vice versa), as shown by the negative correlations between provider dominance and client agreeableness ($r = –.21$) and between provider submissiveness and client agreeableness ($r = –.21$). Finally, provider submissiveness and client quarrelsomeness tend to elicit each other ($r = .20$).

Testing Outcome Interdependency

Analytical strategy. We hypothesized that the impact of a party's behavior on client satisfaction depends on the other's behavior (H_3–H_9). We tested these hypotheses using multilevel modeling (Raudenbush and Bryk 2002). Preliminary analysis based on an unconditional mean model showed considerable clustering of satisfaction within clients (intraclass correlation coefficient $\rho = .36$), suggesting that the multilevel modeling approach is appropriate because it captures both between- and within-client variance in satisfaction. We tested a two-level model. We treated service episodes as the Level 1 unit and clients the Level 2 unit. The Level 1 predictors include (1) the four provider behaviors and four client behaviors, which captured the basal effects of behaviors, and (2) the products of provider behavior and client behavior, which captured the interaction effects of behaviors. We tested the following four interaction effects on the agency dimension, which are central to our hypotheses testing: (1) provider dominance × client dominance, (2) provider dominance × client submissiveness, (3) provider submissiveness × client dominance, and (4) provider submissiveness × client submissiveness. The four interaction effects on the communal dimension include (1) provider agreeableness × client agreeableness, (2) provider agreeableness × client quarrelsomeness, (3) provider quarrelsomeness × client agreeableness, and (4) provider quarrelsomeness × client quarrelsomeness. We initially also included the interactions between behaviors on different dimensions (e.g., provider dominance × client agreeableness). Because none of the cross-dimensions interactions were significant, we excluded them from the final model. We mean-centered all behaviors to minimize multicollinearity. Because a client interacted with several providers during some episodes, we incorporated a series of dummy indicators of providers in the Level 1 model to capture the variance associated with the providers (Raudenbush 1993). To capture potential time-varying effects, our initial Level 1 model also included time, operationalized as the number of days since study inception. Because time did not have main or interaction effects, we excluded it from the final model. We initially specified all Level 1 predictors as random effects. Because none of the interaction effects or the effects of provider dummies varied across clients (according to the Wald tests of the covariance parameter estimates), we opted for a more parsimonious model that treated the interaction terms and the provider dummies as fixed effects. We used client gender and age as the Level 2 covariates. Mathematically, we tested the following model:

(1) The Level 1 Model

$$Y_{ij} = \pi_{0j} + \Sigma\pi_{pj}I_{pij} + \Sigma\pi_{mj}P_{mij} + \Sigma\pi_{nj}C_{nij} + \Sigma\pi_{kj}P_{mij}C_{nij} + e_{ij}, \text{ and}$$

(2) The Level 2 Model

$$\pi_{0j} = \beta_{00} + \beta_{01}(\text{client age}) + \beta_{02}(\text{client gender}) + u_{0j}$$

$$\pi_{pj} = \beta_{p0} + \beta_{p1}(\text{client age}) + \beta_{p2}(\text{client gender})$$

$$\pi_{mj} = \beta_{m0} + \beta_{m1}(\text{client age}) + \beta_{m2}(\text{client gender}) + u_{mj}$$

$$\pi_{nj} = \beta_{n0} + \beta_{n1}(\text{client age}) + \beta_{n2}(\text{client gender}) + u_{nj}$$

$$\pi_{kj} = \beta_{k0} + \beta_{k1}(\text{client age}) + \beta_{k2}(\text{client gender})$$

In the Level 1 model, Y_{ij} represents satisfaction of client j in episode i, π_{0j} is the intercept corresponding to client j, e_{ij} is the residual associated with client j and episode i, $\Sigma\pi_{pj}I_{pij}$ (p = 24) represents the vector of the provider dummies, $\Sigma\pi_{mj}P_{mij}$ (m = 4) is the vector of parameter estimates for the simple (basal) effects of the four provider behaviors, and $\Sigma\pi_{kj}C_{nij}$ (n = 4) represents the simple effects of the four client behaviors Because all behaviors were mean centered, the simple effect of a behavior reflects the effect of that behavior when all other behaviors were at their mean levels (Cohen et al 2003, Raudenbush and Bryk 2002) The term $\Sigma\pi_{kj}P_{mij}C_{nij}$ (k = 8) denotes the vector of the parameter estimates for the eight interaction terms between provider behavior and client behavior In general, the positive sign of an interaction term indicates a pattern of outcome interdependency in which the co-occurrence of both parties' behaviors positively influences client satisfaction In contrast, in general, the negative sign of an interaction term reflects a dyadic pattern in which the co-occurrence of both behaviors negatively affects client satisfaction (Cohen et al 2003, 285–86)

We tested the model using the SAS MIXED procedure (Version 8) We estimated all fixed effects using the maximum likelihood method We tested several covariance structures for the random effects, including the unrestricted and first-order autoregressive structures Because all structures yielded essentially the same parameter estimates, we report the results based on the unrestricted structure Table 3 presents the parameter estimates for the fixed effects Because the estimates for the provider dummies reflected only idiosyncratic effects, we omitted them from Table 3 for ease of presentation

Table 3 shows that clients' age had a positive main effect on satisfaction (β = 04, $p <$ 01) There was no main effect of gender Neither gender nor age interacted with provider or client behaviors ($ps >$ 10) On the agency dimension, provider submissive behavior had a positive simple effect on satisfaction (β = 28, $p <$ 05), whereas client submissive behavior had a negative simple effect (β = – 23, $p <$ 05) These simple effects suggest that in general, holding other behaviors at mean levels, provider submissiveness enhanced client satisfaction, whereas client submissiveness dampened satisfaction On the communal dimension, both provider quarrelsome behavior and client quarrelsome behavior showed negative simple effects (β = – 49, and β = – 25, respectively, $ps <$ 05) More important, several interaction terms between provider behavior and client behavior on both dimensions were significant, providing initial support for the existence of outcome interdependency Next, we detail our analyses of these interaction effects separately for each dimension

TABLE 3
Parameter Estimates for the Effects of Dyadic Behaviors and Client Characteristics on Client Satisfaction

Effects	β	SE	t-Value
Intercept	4 70	4 50	1 04
Client age	04	01	4 45***
Client gender	– 21	11	–1 92*
Provider dominant behavior	– 02	06	– 30
Provider submissive behavior	28	14	2 00**
Provider agreeable behavior	00	07	50
Provider quarrelsome behavior	– 49	21	–2 35**
Client dominant behavior	– 02	06	– 33
Client submissive behavior	– 23	09	–2 53**
Client agreeable behavior	05	08	62
Client quarrelsome behavior	– 25	12	–2 08**
Provider submissive behavior × client submissive behavior	– 17	07	–2 60***
Provider dominant behavior × client dominant behavior	– 04	02	–2 15**
Provider dominant behavior × client submissive behavior	07	03	2 26**
Provider submissive behavior × client dominant behavior	12	06	2 02**
Provider quarrelsome behavior × client agreeable behavior	– 30	12	–2 46***
Provider quarrelsome behavior × client quarrelsome behavior	74	26	2 86***
Provider agreeable behavior × client agreeable behavior	03	03	90
Provider agreeable behavior × client quarrelsome behavior	10	06	1 58

*$p <$ 1
**$p <$ 05
***$p <$ 01
Notes N = 1477

The agency dimension All four interaction terms on the agency dimension were significant and in the expected direction The negative sign of the interaction between provider submissiveness and client submissiveness provided initial support for H_3 The negative sign of the interaction between provider dominance and client dominance is consistent with H_4 The positive interaction between provider dominance and client submissiveness and the positive interaction between provider submissiveness and client dominance support H_5 and H_6, respectively To gain further insights into these interaction effects, for each interaction term, we estimated the effect of one party's behavior at the low, medium, and high levels of the other's behavior We defined the low, medium, and high levels of a behavior as one standard deviation below, at, and one standard deviation above the mean frequency of that behavior, respectively (Jaccard and Turrisi 2003, 29–32) Table 4, Panel A, presents the parameter estimates for each interaction term

For the negative interaction between provider submissiveness and client submissiveness, Table 4, Panel A (upper

TABLE 4
The Effect of One Party's Behavior on Client's Satisfaction Across Different Levels of the Other Party's Behavior

A: The Agency Dimension

	Client Dominance			Client Submissiveness		
	Low	Medium	High	Low	Medium	High
Provider dominance	02	– 018	– 13**	– 24**	– 018	21**
	(08)	(06)	(06)	(12)	(06)	(10)
Provider submissiveness	– 01	28**	32***	30***	28**	01
	(14)	(14)	(09)	(13)	(14)	(10)

	Provider Dominance			Provider Submissiveness		
	Low	Medium	High	Low	Medium	High
Client dominance	04	– 02	– 12**	– 22**	– 02	18*
	(08)	(06)	(06)	(11)	(06)	(14)
Client submissiveness	– 39***	– 23**	– 06	03	– 23**	– 48***
	(15)	(09)	(08)	(14)	(09)	(13)

B: The Communal Dimension

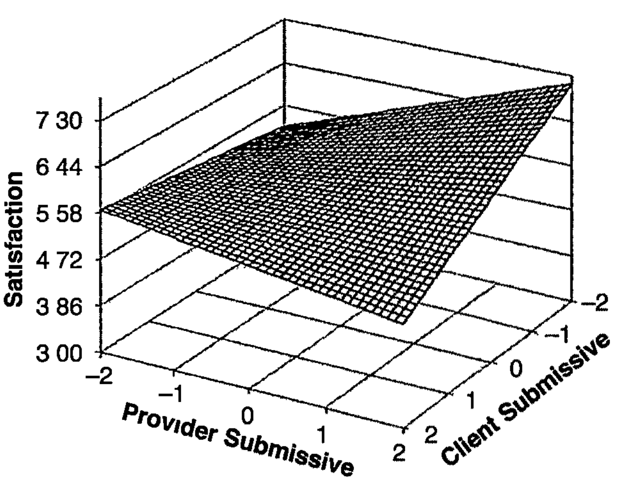
	Client Agreeableness			Client Quarrelsomeness		
	Low	Medium	High	Low	Medium	High
Provider agreeableness	– 005	04	07	001	04	06
	(09)	(07)	(07)	(08)	(07)	(07)
Provider quarrelsomeness	– 04	– 49**	– 93***	– 75***	– 49**	– 22
	(32)	(21)	(23)	(27)	(21)	(18)

	Provider Agreeableness			Provider Quarrelsomeness		
	Low	Medium	High	Low	Medium	High
Client agreeableness	06	05	13*	18**	05	00
	(10)	(08)	(07)	(08)	(07)	(09)
Client quarrelsomeness	– 33*	– 22**	– 12	– 45***	– 22**	009
	(17)	(12)	(12)	(17)	(12)	(09)

*$p < 1$
**$p < 05$
***$p < 01$
Notes N = 1477

portion), shows that the positive effect of provider submissive behavior on client satisfaction decreased (from β = 30 to not significant [n s]) as client submissive behavior increased Conversely, the negative impact of client submissive behavior intensified (from n s to β = – 48) as provider submissive behavior increased (lower portion of Table 4, Panel A) These findings suggest that as client submissive behavior and provider submissive behavior co-occur, the potential positive effect of provider submissive behavior is suppressed, whereas the potential negative impact of client submissiveness is intensified This pattern of behavioral contingency provides further support for H_3 Figure 2 is a surface plot of this interactive mechanism The curved (rather than smooth) surface indicates that the effect of a party's behavior on client satisfaction was not constant across different levels of the partner's behavior As provider submissiveness increased, the effect of client submissiveness (see the series of front-back lines) became increasingly negative As client submissiveness increased, the effect of

FIGURE 2
The Joint Effect of Provider Submissiveness and Client Submissiveness on Client Satisfaction



provider submissiveness (see the series of right-left lines) changed from positive to negative

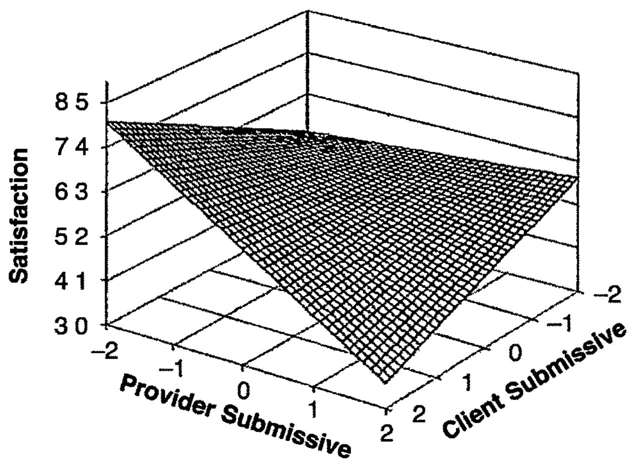
An examination of the negative interaction between provider dominance and client dominance suggests that the impact of provider dominant behavior becomes increasingly negative (from n s to $\beta = -13$) with the increase of client dominant behavior Moreover, the effect of client dominant behavior became increasingly negative with the increase of provider dominant behavior (from n s to $\beta = -12$) Thus, consistent with H_4, the co-occurrence of provider dominant behavior and client dominant behavior negatively affects client satisfaction

The analysis of the positive interaction between provider dominance and client submissiveness indicates that the negative impact of provider dominance was reversed (from $\beta = -24$ to $\beta = 21$) as client submissive behavior increased Conversely, the negative impact of client submissiveness was mitigated (from $\beta = -39$ to n s) as provider dominant behavior increased. Thus, consistent with H_5, the co-occurrence of provider dominance and client submissiveness contributed to client satisfaction The negative impact of each party's behavior on client satisfaction decreased with the other's behavior

For the positive interaction between provider submissiveness and client dominance, Table 4, Panel A, shows that the effect of provider submissiveness becomes increasingly positive (from n s to $\beta = 32$) as client dominance increases Conversely, the impact of client dominance is reversed from a negative impact ($\beta = -22$) to a borderline positive effect ($\beta = 18$) as provider submissive behavior increases These results further corroborate the positive joint effect between provider submissiveness and client dominance H_6 specifies

The communal dimension On the communal dimension, there emerged a negative interaction between provider quarrelsomeness and client agreeableness ($\beta = -30, p < 01$, see Table 3), providing initial support for H_7 The positive interaction between provider quarrelsomeness and client quarrelsomeness ($\beta = 74, p < 01$) is consistent with H_8 However, the interaction between provider agreeable behavior and client agreeable behavior did not reach statistical significance ($p > 30$), though the sign of the interaction was in the expected direction Thus, the data do not support H_9

FIGURE 3
The Joint Effect of Provider Quarrelsomeness and Client Agreeableness on Client Satisfaction



To gain further insights into the interaction effects, for each interaction term, we estimated the effect of one party's communal behavior at the low, medium, and high levels of the other's communal behavior (presented in Table 4, Panel B) The set of parameter estimates corresponding to the negative interaction between provider quarrelsomeness and client agreeableness indicates that the negative impact of provider quarrelsome behavior on client satisfaction intensified (from n s to $\beta = -93$) as client agreeable behavior increased Conversely, the positive effect of client agreeable behavior decreased (from $\beta = 18$ to n s) as provider quarrelsomeness increased (lower portion of Table 4, Panel B) These findings further corroborate H_7 Figure 3 is a surface plot that illustrates this interaction effect The set of parameter estimates for the positive interaction between provider quarrelsome behavior and client quarrelsome behavior provide further support for H_8 In particular, the negative impact of provider quarrelsome behavior decreased (from $\beta = -75$ to n s) as client quarrelsome behavior increased Similarly, the negative impact of client quarrelsome behavior also decreased (from $\beta = -45$ to n s) as provider quarrelsome behavior increased Finally, an examination of the interplay between provider agreeableness and client agreeableness shows that neither provider agreeable behavior nor client agreeable behavior had appreciable impact on satisfaction, regardless of the partner's agreeable behavior Thus, the data do not support the hypothesized positive outcome interdependency between provider agreeableness and client agreeableness (H_9)

Model comparison To further assess the incremental predictive power of the joint effects of dyadic behaviors, relative to the basal effect of each behavior, we estimated a reduced model that excluded all the interaction effects between provider and client behaviors The simple effects of provider and client behaviors in the reduced model were largely consistent with those estimated in the full model However, we determined that the full model fit the data significantly better than the reduced model, on the basis of the chi-square test of the deviance statistic ($\chi^2 = 29$, d f $= 8, p < 001$)

General Discussion

The current research distinguishes between process interdependency and outcome interdependency in frontline service encounters and uncovers specific patterns of both forms of dyadic interdependency through a field study Using the ICM and the concept of complementarity, our findings on process interdependency indicate that dyadic behaviors elicit or inhibit each other largely in a complementary manner Our findings on outcome interdependency suggest that provider and client behaviors jointly enhance or dampen client satisfaction, depending on the complementarity or anticomplementarity of the dyadic interactions

Theoretical Contributions

The current study enriches the understanding of service encounters in several important ways First, whereas prior research has treated dyadic interdependency as a unitary construct, we show that provider and client behaviors are interdependent with regard to both service process and outcome We also show that the two forms of interdependency are closely related The joint impact of dyadic behaviors on client satisfaction depends on the complementarity between the behaviors Because process and outcome interdependencies are conceptually distinct and closely related, theoretical and empirical knowledge should be gained for each form of interdependency, and the synthesis of knowledge about both forms of interdependency would help build a more comprehensive model of service encounters

Second, the stable patterns of process and outcome interdependency uncovered in this study enhance the conceptual richness and predictability of dyadic interdependency We found that provider and client behaviors elicit and constrain each other largely in a complementary manner and that complementary and anticomplementary interactions influence client satisfaction through predictable patterns of interplay between the two parties' behaviors These findings suggest that the ICM and the concept of complementarity are useful frameworks for predicting process and outcome interdependency in frontline service encounters However, we also found dyadic patterns that deviate from the complementarity norm These findings show that the frontline service encounter is a special form of social interactions, whose unique characteristics call for dedicated research

Third, the current study contributes to the contingency theory on service encounters (Weitz 1981) While prior research has focused on the contingency factors antecedent to the service interactions, our findings suggest that the effect of each party's behavior on service outcome is also contingent on the other's matching or mismatching behavior within the interaction process Specifically, dyadic behaviors could either enhance or dampen client satisfaction, depending on the degree to which the two parties' behaviors complement each other These findings point to the existence of within-process interpersonal contingencies, which are different from the antecedent factors examined previously (e g , Weitz 1981, Weitz, Sujan, and Sujan 1986) Because the within-process contingencies significantly affect service outcome, they deserve further research within the framework of the contingency theory

Moreover, the current study enriches extant literature on the ICM Unlike prior studies that have examined the effect of complementarity using experimentally induced dyadic patterns (e g , Tiedens and Fragale 2003), ours is the first to examine the effect of complementarity using behaviors directly observed in a field setting The use of within-process, behavior-level data enabled us not only to assess the overall effect of complementarity versus anticomplementarity but also to gain insights into how specific behaviors within a complementary (anticomplementary) pattern alter each other's effect on interaction outcome Although each party's behavior can individually influence interaction outcome through its basal effect, the fusion of two parties' complementary behaviors can produce positive synergy, whereby one party's behavior either enhances the positive effect or mitigates the negative effect of the other's behavior Likewise, the fusion of anticomplementary behaviors can produce negative synergy, in which one party's behavior either aggravates the negative impact or suppresses the positive effect of the other's behavior Prior studies on complementarity have not concurrently examined the basal and interaction effects of behaviors The findings from our study suggest that by concurrently examining the basal and interaction effects, researchers could uncover predictable patterns of interplay between dyadic behaviors that potentially substantiate the impact of complementarity (anticomplementarity) However, because these patterns of interplay have not been studied previously, our findings on these patterns are preliminary and await further investigation

Finally, the current study highlights the importance of a dyadic approach to research on service encounters rather than the single-party approach prior research has adopted Although both provider and client behaviors can influence client satisfaction individually, the manner in which the dyadic parties interact with each other is a more important predictor of client satisfaction Thus, exclusively focusing on one party's role may fail to reveal important determinants of client satisfaction

Managerial Implications

The distinction between process and outcome interdependencies offers important managerial implications Insights into process interdependency enable managers to identify the causal relationship between two parties' enactment of behavior, whereas knowledge of outcome interdependency is useful for evaluating the impact of various interaction patterns on client satisfaction The insights gained from both forms of interdependency offer greater potential for achieving quality excellence than knowledge about any one form would do On the basis of the distinction between the two forms of interdependency, we recommend a three-step framework for improving service quality This framework begins with identifying the default patterns of process interdependency (i e , the patterns of interactions that naturally occur in the service setting) For example, a restaurant manager may observe a high rate of mutual dominance between dyad members, which tends to occur when the client insists on a preferred item but the provider recommends a "better" alternative Because all default patterns of process interdependency do not enhance client satisfaction, managers should complete a diagnostic process to assess the effect of various default patterns of interactions on client satisfaction This diagnostic step helps managers distinguish between patterns of interactions that enhance and those that dampen client satisfaction Finally, managers should take a corrective step to minimize or eliminate unfavorable dyadic patterns and retain or reinforce favorable patterns For example, if a manager finds that the pattern of mutual dominance undermines client satisfaction, he or she should develop service scripts to help minimize such a pattern For example, when the client makes an explicit request for a service option, the provider may be advised to enact submissive behavior appropriate for the specific situation (e g , doing as requested or asking for permission to offer alternative options)

Our findings on process interdependency indicate that the frontline service encounter is a process of mutual adaptation in that the client not only expects complementary behavior from the provider but also adjusts his or her own behavior to complement the provider Thus, the provider can play a more active role in enhancing the client's service experience by capitalizing on the client's tendency to complement For example, when the client acts quarrelsomely because of a service failure, the provider could act agreeably (e g , listen attentively) or dominantly (e g , suggest solutions) Although our findings on outcome interdependency showed that the provider's agreeable or dominant responses to the client's quarrelsome behavior do not have immediate positive effect, such responses could help create a more facilitating environment for service recovery by either mitigating the client's hostility or reorienting the client's behavior toward a task-oriented direction

Our findings on outcome interdependency suggest that the provider should coordinate his or her behavior with that of the client to achieve positive synergy Moreover, our analysis of the interplay between dyadic behaviors indicates that outcome interdependency is a dynamic process in that the effect of each party's behavior on client satisfaction depends on not only the type of the other's behavior but also the changes (increase or decrease) of the other's behavior Maximal client satisfaction is likely to occur when the two parties' complementary behaviors increase concurrently, whereas minimal client satisfaction may result when the two parties' anticomplementary behaviors increase concomitantly These findings suggest that the provider should not only recognize the type of client behavior at a given point of time but also adjust to the upward or downward trend of the client's behavior The dynamic nature of outcome interdependency also suggests that managers should allow sufficient flexibility in designing service scripts so that the provider is not overly constrained when dealing with the moment-to-moment changes of dyadic behaviors

Finally, our study suggests that the SBI is a desirable tool for managers to identify and diagnose patterns of dyadic interdependency With proper adjustments, this instrument can be used to collect interpersonal data through either subjective reports or direct observation Because the SBI was designed to capture interpersonal behaviors across various personal and work-related contexts, managers may find it necessary to revise the instrument in light of the specific characteristics of their service settings, subject to proper validation (Moskowitz 1994)

Limitations and Further Research

The current study examines the effect of provider–client behaviors on attitudinal outcome—namely, client satisfaction with the service encounter Further research can build on this study to examine the effect of dyadic behaviors on more objective service outcomes such as the amount of purchase and the frequency of repeat purchase Such research would further expand theoretical understanding of dyadic interdependency and offer important managerial insights

We must acknowledge some methodological limitations of our study First, the geriatric nature of our client sample deserves discussion Because the client participants were carefully screened, response bias due to cognitive or emotional dysfunctions should be minimal However, dyadic interdependency observed in our study may have been affected by age-related differences in interpersonal style In general, the interpersonal style of elderly people is less dominant than that of young people (Helson et al 2002) This age difference could affect dyadic interdependency on the agency dimension The providers in our study may have perceived the clients' relatively low agency and acted accordingly in a more dominant manner In service encounters that involve younger clients, providers may act more submissively and less dominantly owing to the clients' relatively high agency Provider submissiveness may be more satisfying and provider dominance more dissatisfying for younger clients than for the clients in our study The relatively small size of our client sample is another potential limitation Although this limitation is attenuated somewhat because we aggregated a large number of service episodes for each client, the generalizability of the current study would be enhanced if a larger sample is used

Some limitations of our data collection method also deserve discussion In particular, the presence of the observers in the study setting may have affected provider and client behaviors Research has shown that the presence of others can increase a person's tendency to act in a socially appropriate manner (Fisher and Dubé 2005) Although the observers exercised great care, their presence may still have increased the participants' self-monitoring tendency and made their behaviors more consistent with role expectations For example, the dyad members may have acted more agreeably and less quarrelsomely than they would have done because of increased self-monitoring Thus, it would be desirable (albeit challenging) to use an objective yet less obtrusive data collection method in further research The robustness of our findings could also be tested using alternative sets of data, such as the voice data from a call center Voice data offer a better control for extraneous visual cues and incidental antecedents (e g , the duration of client–provider relationship) and thus might enhance the reliability of behavioral measurements However, for the purpose of theory testing, our use of more complex and dynamic behavioral data provides a more conservative test of our core theses

We omitted some potentially important moderators from our study First, we eliminated dyad members' expectations about each other's interpersonal style on the two dimensions of the ICM Research suggests that people's expectations about others' interpersonal traits on the two dimensions could be correlated Specifically, when a person expects an out-group to have high levels of agency, he or she also expects the group to have low levels of communion, and vice versa (Judd, James-Hawkins, and Yzerbyt 2005) Such correlated expectations may have affected dyadic interdependency in our study Owing to their self-superiority bias, the dyad members in our study may have expected their partners to have low levels of agency and, correspondingly, high levels of communion The mutual expectations for high levels of communion may explain the high frequency of agreeable behavior and the low frequency of quarrelsome behavior in our study The role of expectations may be especially important during the initial encounters because expected behaviors and actual behaviors are most likely to diverge when the dyad members are unfamiliar with each other In service contexts that are characterized by repeated encounters, the role of expectations may be less pivotal because expected and actual behaviors may converge over time

Another potential moderator of dyadic interdependency is the length of provider–client relationship Provider–client dyads differ in the duration of relationships, ranging from the first encounter to decades-long connections Previous research has shown that repeated encounters could lead to a stronger bond and greater trust between providers and clients (Doney and Cannon 1997) Thus, dyadic parties who have a longer history of interactions may be more likely to complement each other on the communal dimension because maintaining affiliative connections is often an important goal for such dyads (Price and Arnould 1999) Moreover, the stronger bond resulting from repeated encounters may serve as a buffer against the potential negative impact of mismatched behaviors on the agency dimension Thus, dyad members who have a longer duration of relationship may be less susceptible to the negative effect of anticomplementary interactions on the agency dimension

Dyadic interdependency can also be influenced by the relative status of the dyad members We examined a service encounter characterized by relatively small status differences Further research could examine services characterized by more distinct status differences In some service encounters, the provider may have some form of superiority over the client because the former is more knowledgeable (e g , a physician, a personal trainer) or has greater bargaining power (e g , a seller of highly demanded products) The providers in such encounters may act more dominantly, and the clients more submissively, than the respective parties in our study Consequently, provider dominance in such settings may have less negative impact on client satisfaction than in the current study

We did not control for the effect of personality traits, a potentially important boundary condition for dyadic interdependency Research has shown that people differ in personality traits the ICM defines (Kiesler 1983) For example, some people have a chronic tendency to act dominantly, while others tend to be chronically submissive Individual differences in personality traits could influence process

APPENDIX
The SBI Items as Measures of Interpersonal Behaviors

Dominant

1 Gave the other information[a]
2 Asked the other to do something
3 Asked whether the other has done something
4 Gave advice to the other
5 Set a goal for self or the other
6 Expressed an opinion
7 Took the lead in planning or organizing the meal activity
8 Assigned self or the other to a task
9 Made a suggestion to the other
10 Told the other what he/she would do

Agreeable

1 Smiled or laughed with the other
2 Inquired after the other
3 Talked socially[a]
4 Listened attentively to the other
5 Agreed with the other
6 Praised the other or expressed concern to the other
7 Enthusiastically helped out
8 Showed sympathy to the other
9 Expressed affection to the other with words/gestures
10 Exchanged pleasantries with the other
11 Let the other deal with things at their own pace

Submissive

1 Let the other decide what he/she wants to do
2 Apologized for something that was not his/her fault
3 Gave in to the other
4 Spoke to the other only when the other spoke to him/her
5 Requested approval for doing something to self or other
6 Did not say to the other what he/she wanted directly
7 Went along with the other's request
8 Waited for the other to act or talk first
9 Avoided giving recommendations to the other
10 Did not argue/discuss with the other
11 Did what the other asked
12 Let the other do all the talking

Quarrelsome

1 Criticized the other
2 Expressed disagreement with the other
3 Said negative things about someone who was not present
4 Discredited what the other said
5 Showed impatience towards the other
6 Confronted the other about something he/she did not like
7 Did not respond to the other's question, comment or request
8 Made a decision for the other and demanded that the other do what he/she wanted
9 Expressed disapproval of the other with words or gestures
10 Stated strongly to the other that he/she did not like, did not want or would not do something
11 Made a sarcastic comment to the other

Notes Items with superscript "a" were repeated across different coding forms interdependency For example, a client with low trait agency would be more likely to act submissively and elicit providers' dominant response Interpersonal traits could also influence outcome interdependency For example, a client who has high trait submissiveness may find the provider's dominant behaviors in general satisfying

Finally, the unexpected finding that the co-occurrence of provider and client agreeable behaviors did not influence client satisfaction deserves discussion This finding may be explained by clients' normative expectations of provider agreeableness A widely held expectation in the service industry is that the service provider should treat the client agreeably, "service with a smile" has become one of the most touted mantras (Pugh 2001) Clients' expectations for provider agreeableness may be particularly high in the current study because staff members in a rehabilitation center are often obliged to support clients' psychological well-being Consequently, provider agreeableness in our study may have become the client's normative expectations—that is, something that the provider *ought* to perform Given its normative nature, provider agreeable behavior may have acted as a "hygiene factor" (Herzberg 1964) in that the presence of such behavior may have little impact on client satisfaction, even if it co-occurs with the client's agreeableness, whereas the deviation of provider behavior from the normative expectations (i e , provider quarrelsomeness) would be deleterious to client satisfaction

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Poisoning Relationships: Perceived Unfairness in Channels of Distribution

Understanding how relationships are damaged is a critical component in building and preserving strong distribution channels. Using longitudinal data from a *Fortune* 500 firm and its channel members, this research shows that perceived unfairness truly acts as "relationship poison" by directly damaging relationships, aggravating the negative effects of both conflict and opportunism, and undermining the benefits of using contracts to manage channel relationships. Surprisingly, at low levels of perceived unfairness, conflict and opportunism have small or even insignificant effects on channel member outcomes, which implies that research investigating the negative impact of conflict and opportunism on exchange outcomes may need reevaluation because these effects are contingent and may vary depending on the levels of perceived unfairness. In addition, the findings support the premise that using contracts to manage channel relationships represents a double-edged sword that suppresses the negative effects of conflict and opportunism while aggravating the negative effect of unfairness.

Keywords: relationship marketing, contracts, fairness, channels, equity theory, opportunism, conflict

Understanding how channel relationships are damaged is a critical component in building and preserving strong distribution channels. A recent meta-analysis of relationship marketing research reveals that the negative effect of conflict overshadows the benefits associated with all other positive relationship marketing activities (Palmatier et al. 2006). Similarly, opportunism has a corrosive effect on exchange performance (Gundlach, Achrol, and Mentzer 1995; Morgan and Hunt 1994; Wathne and Heide 2000). Research outside marketing further reveals that a few negative events may overwhelm the cumulative effects of many positive activities, such that the long-term success of a relationship often depends more on preventing or mitigating the "bad" than on accumulating the "good" (Baumeister et al. 2001; Gottman 1994). If a few poorly managed, negative interactions can undermine significant investments in channel relationships, it is important that both academics and managers understand how and when relationship-destroying factors affect business performance. Addressing these questions represents the primary focus of this research.

The two relationship-destroying factors most often studied in business-to-business research are conflict (Frazier and Rody 1991; Gaski 1984) and opportunism (Gundlach, Achrol, and Mentzer 1995; Wathne and Heide 2000). Despite the significance of unfairness for service recovery, it typically does not appear in models of channel relationships (Smith, Bolton, and Wagner 1999), with some notable exceptions (e.g., Brown, Cobb, and Lusch 2006; Kaufmann and Stern 1988; Kumar, Scheer, and Steenkamp 1995b). Kumar, Scheer, and Steenkamp's (1995b) classic article highlights the importance of fairness in interorganizational relationships, demonstrating that perceptions of fairness have a strong influence on the quality of a relationship. We build on this research by investigating the effects of all three relationship-destroying factors (conflict, opportunism, and unfairness) simultaneously. Specifically, we propose that perceived unfairness acts as "relationship poison" by directly damaging channel relationships, aggravating the negative effects of both conflict and opportunism, and undermining the benefits of frequently accessing contracts to manage channels of distribution. Research in fields outside marketing indicates that the role of unfairness is greater than is typically acknowledged because people tend to go out of their way to punish actions they perceive as unfair, even at a cost to themselves (Fehr and Gachter 2000; Offerman 2002). Unfair acts often incite even greater backlash than other negative activities because of the emotional imperative to punish unfair partners (Turillo et al. 2002).

We empirically test the simultaneous effects of the three relationship-destroying factors on relational behaviors and channel member performance using multiyear, longitudinal survey data from 492 channel members (resellers) of a *Fortune* 500 firm. Each stage in our model is based on data captured at one-year intervals, which reduces common method bias concerns and increases support for our causal arguments. Accordingly, our research contributes to existing literature in several ways.

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ISSN: 0022-2429 (print), 1547-7185 (electronic)

First, the results support our premise that the role of perceived unfairness is critical for understanding the overall impact of relationship-destroying factors on channel outcomes The direct negative effect of perceived unfairness on relational behaviors (channel member cooperation and flexibility) and, subsequently, financial performance is similar to or greater than the effects of conflict and opportunism In addition, unfairness moderates the negative effects of conflict and opportunism on relational behaviors, such that conflict and opportunism cause much more damage to channel relationships when they are accompanied by perceptions of unfairness Surprisingly, a post hoc analysis shows that at low levels of perceived unfairness, conflict and opportunism have small or even insignificant effects on relational outcomes These findings suggest the need for a reevaluation of research studying the negative impact of conflict and opportunism on channel performance because these effects are contingent on levels of unfairness (e g , Crosno and Dahlstrom 2008, Lee 1998, Skinner, Gassenheimer, and Kelley 1992) Moreover, research should take a multitheoretical, holistic approach because in addition to direct effects, unfairness aggravates the effects of both conflict and opportunism The findings also suggest that managers should proactively resolve unfairness issues before tackling conflict and opportunism because of their leveraging effects For example, managers might develop specific education and training programs that stress the importance of fairness, identify the types of situations most likely to trigger unfairness perceptions, and develop "unfairness prevention" strategies

Second, just as unfairness aggravates the negative effects of conflict and opportunism, the results reveal that using contracts to mitigate the harmful effects of conflict and opportunism may aggravate the negative effects of unfairness on channel performance Thus, contract utilization, which we define as the frequency with which the channel member and seller employ contracts to manage the exchange, can suppress the negative effects of conflict and opportunism while enhancing the negative effect of unfairness on performance outcomes Our conceptualization of contract utilization does not measure the simple presence or absence of a contract—all exchanges in our sample used contractual agreements—but rather how often firms enforce their contract to manage the relationship For example, if firms often resort to using contracts to ensure that the other party is meeting its obligations, the level of contract utilization is high

With regard to this double-edged-sword phenomenon, our post hoc analysis indicates that contract utilization can have a net positive or net negative effect, depending on the amount of unfairness present, relative to the levels of conflict and opportunism In general, managers should increase contract utilization when conflict and opportunism are high because in such cases the suppressive effects of contract utilization increase and make the strategy more desirable From a managerial perspective, firms should not use a contract to manage a single negative behavior at a time but rather should consider the joint implications of contract utilization on many negative behaviors

Theoretical and empirical support for these opposing effects of contract utilization also helps explain some contradictions in previous research on the efficacy of contracts (Brown, Dev, and Lee 2000, Joskow 1987, Wuyts and Geyskens 2005, Young and Wilkinson 1989) For example, Cannon, Achrol, and Gundlach (2000, p 191) maintain that "contracts [are] effective in enhancing supplier performance individually and in combination," whereas Jap and Ganesan (2000, p 241) suggest that "contracts, similar to prenuptial agreements in interpersonal relationships, signal distrust and are often complex, which reduces flexibility and may subsequently lower relationship performance "

Third, our research provides a more holistic framework that integrates multiple relationship-destroying factors into one model and elucidates the key role of unfairness and the trade-offs associated with using contracts to manage negative behaviors Integrating relationship-destroying factors, especially unfairness, into future models of relationship marketing may provide a more balanced view of building and protecting relationships For example, research into the actual effects of loyalty programs could be reevaluated in the light of our results to determine whether the positive effects of the loyalty program may become overwhelmed by the negative effects of perceived unfairness For example, do the positive effects of customers who receive VIP privileges outweigh the negative effects induced by the unfairness perceived by peripheral customers, who do not receive such benefits?

Relationship-Destroying Factors

Prior literature has shown that conflict and opportunism are the most widely studied negative factors in business-to-business research, unfairness emerges as critical primarily for understanding service recovery and in a few studies in the channels domain (for a summary of selected literature, see Table 1) Although diverse research has addressed the effects of each negative factor in isolation, to the best of our knowledge, no studies have investigated how these factors work together to undermine channel relationships The link between relationship-destroying factors and performance receives reinforcement across a plethora of theoretical domains (e g , reciprocity theory, transaction cost economics, equity theory), in which conflict, opportunism, and unfairness all help explain exchange outcomes (Fehr and Gachter 2000, Hibbard, Kumar, and Stern 2001, Kumar, Scheer, and Steenkamp 1995b, Williamson 1975)

An inescapable component of close interorganizational relationships, conflict pervades business activities (Anderson and Narus 1990, Hibbard, Kumar, and Stern 2001) In general, it occurs when one party perceives another as interfering with its goal attainment Rahim (2002, p 207) defines it specifically as an "interactive process manifested in incompatibility, disagreement, or dissonance within or between social entities (i e , individual, group, organization,

TABLE 1
Selected Literature of Conflict, Opportunism, and Unfairness Effects on Performance

Reference	Context	Theory	Moderators	Key Findings
Conflict				
Skinner, Gassenheimer, and Kelley (1992)	Supplier–dealer relations in the farm and power equipment	Power theory (Gaski 1984)		Conflict has a negative effect on both cooperation and satisfaction
Hibbard, Kumar, and Stern (2001)	Dealer network of a *Fortune* 500 manufacturer of durable goods	Exit voice and loyalty framework (Hirschman 1970)		Dealer's reaction to destructive acts are influenced by the intensity and attributions of the destructive acts and the pre-act relationship quality and interdependence of the partners
Lee (2001)	Chinese distributors engaging in an international joint venture with suppliers	Power theory (Gaski 1984)		The level of conflict perceived by distributors is negatively related to their satisfaction with their relationships with their suppliers
Koza and Dant (2007)	Conflict resolution behaviors of a large North American supplier with its retailing agents	Norms in economic exchange (Heide and John 1992)		Conflict-laden relationships can affect communication and conflict resolution behaviors, which can decrease relational norms, including flexibility
Opportunism				
Gundlach, Achrol, and Mentzer (1995)	Behavioral simulation depicting manufacturer and distributor exchange relationships in a channel setting	Transaction cost economics (Williamson 1985)		Opportunism erodes the development of relational norms, including flexibility When opportunism occurs, partners are less likely to behave in a flexible or compromising manner
Lee (1998)	Investigates exporters' intentions to form strategic alliances with foreign exchange partners	Transaction cost economics (Williamson 1985)		Opportunism has a negative impact on relational exchange
Wathne and Heide (2000)	Theoretical discussion of conditions that lead to opportunism	Transaction cost economics (Williamson 1985)	Lock-in and information asymmetry	Case-based evidence supports existence of different forms of opportunism and their facilitating conditions
Crosno and Dahlstrom (2008)	Meta-analytic review of opportunism in exchange relationships	Transaction cost economics (Heide 1994, Williamson 1985)	Organizational context, research strategy, number of industries	Partner-based opportunism is negatively associated with performance, norms, satisfaction, and communication
Perceived Unfairness				
Kaufmann and Stern (1988)	Lawsuits involving buyer–seller relationships	Relational exchange (Macneil 1980)	Attribution of observed conflict behavior	Buyer–seller negotiations that are perceived as betraying contract norms lead to increases in hostility
Kumar, Scheer, and Steenkamp (1995b)	Supplier–reseller relationships between regional car dealers and national manufacturers	Distributive fairness (Frazier, Spekman, and O'Neal 1988), procedural fairness (Lind and Tyler 1988)	Level of outcomes, environmental uncertainty	Perceptions of distributive and procedural fairness enhance relationship quality
Tax, Brown, and Chandrashekaran (1998)	Investigates customer evaluations of service complaint experiences	Distributive (Deutsch 1985) and procedural (Lind and Tyler 1988) justice	Experience	Distributive, procedural, and interactional justice affect satisfaction with complaint handling, which influences trust and commitment
Brown, Cobb, and Lusch (2006)	Supplier–wholesaler relationships	Distributive and procedural justice		Perceptions of justice negatively affected manifest conflict
Griffith, Harvey, and Lusch (2006)	Supply chain relationships	Distributive (Deutsch 1985) and procedural (Lind and Tyler 1988) justice		Distributive and procedural justice influence long-term orientation and relational behavior

etc)" Although some research extols the benefits of positive or functional conflict, most authors recommend reducing or resolving it (Rahim 2002) We use the term "channel member conflict" to capture the disagreement between a seller and a channel member as each party strives to achieve its business goals

In a widely used definition, Williamson (1975, p 6) refers to opportunism as "self-interest seeking with guile" Examples of opportunistic behavior include withholding or distorting information and shirking or failing to fulfill promises or obligations Although in transaction cost economics theory the original formulation of opportunism describes it as a violation of explicit contracts, other researchers indicate that opportunism can also encompass active and passive attempts to violate either written or social contracts that govern an exchange (Wathne and Heide 2000) However, opportunism does not include other forms of self-interest-seeking behavior, such as hard bargaining and intense negotiating The notion of guile, which Williamson (1975, p 47) describes as "lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse," sets it apart Therefore, the fundamental essence of opportunism pertains to this element of deceit We use the term "seller opportunism" to capture the channel member's perception of the degree to which the seller engages in self-interest-seeking behaviors with guile

Finally, most fairness research relies on equity theory, which suggests that people should receive benefits or rewards in proportion to their own relative efforts or inputs (Adams 1965, Brown, Cobb, and Lusch 2006, Griffith, Harvey, and Lusch 2006, Kumar, Scheer, and Steenkamp 1995b) According to equity theory, people compare the ratios of their perceived outcomes to their inputs with the corresponding ratios of others If the ratios seem unequal, the party with the lower ratio feels inequitably rewarded and often experiences anger or tension Most people respond by adjusting their own inputs or efforts or undertaking punitive behaviors that punish the other party to shift this unpleasant state into a more equitable one (Adams 1965, Kaufmann and Stern 1988, Utne and Kidd 1980) We use the term "perceived unfairness" to capture the channel member's view of the degree to which the distribution of rewards relative to its efforts is inequitable

Although extant research supports the negative effects of these three relationship-destroying factors, little research investigates how they may interact to undermine channel performance, which is a key objective of this article Prior research has suggested that people are more likely to seek explanations for a negative than a positive event (Folkes 1988) Thus, when channel members perceive conflict or opportunism, they would seek out a reason for these negative behaviors (Weiner 1995) However, they also may regard a certain amount of conflict and opportunism in their interorganizational relationships as unavoidable (Anderson and Narus 1990, Wathne and Heide 2000), and therefore, the seller may not be held accountable for "expected" negative interactions However, the presence of unfairness indicates an underlying negative motive or intent (Campbell 1999, Kidd and Utne 1978, Utne and Kidd 1980), so its appearance should cause channel members to shift their perceptions of the causes of the conflict or opportunism from expected, unavoidable, external phenomena to direct seller attributions In the presence of perceived unfairness, a channel member likely finds the seller more accountable and responsible, with a higher degree of intentionality, for any ensuing conflict and opportunism and therefore may react more punitively (Kaufmann and Stern 1988, Turillo et al 2002, Weiner 1995)

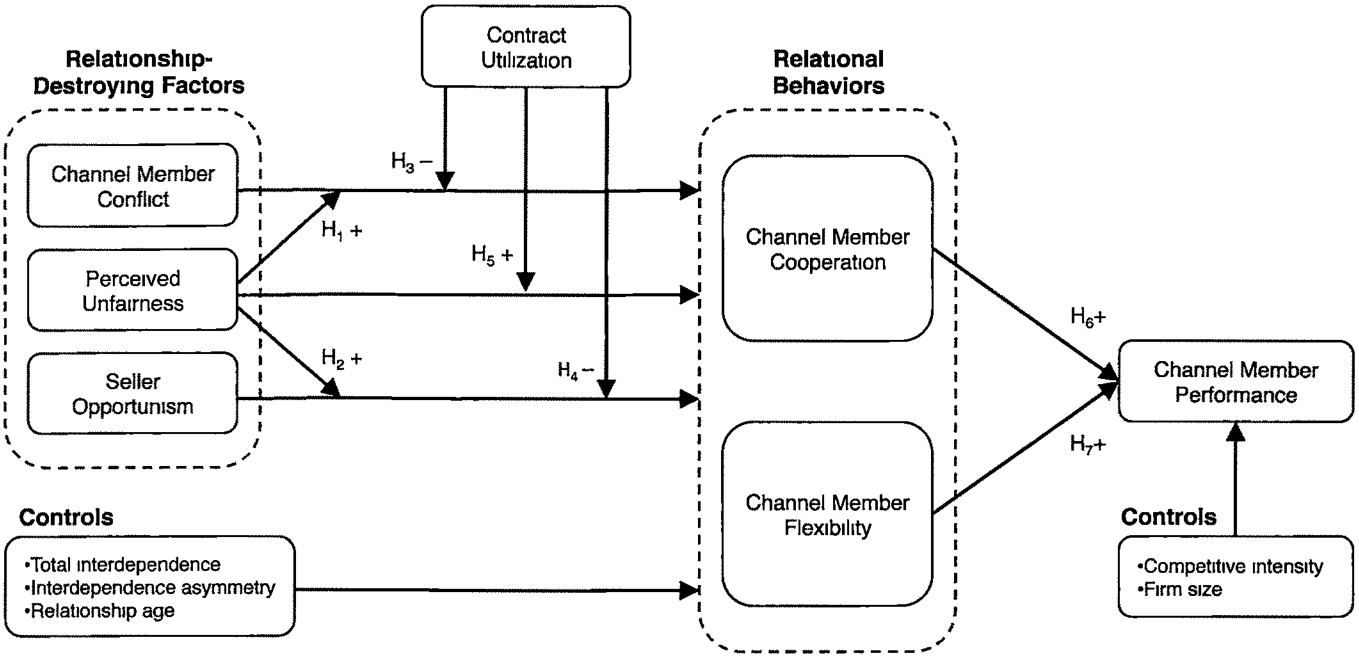
In this sense, perceptions of unfairness provide the channel member with information about the motive and intentions of the seller, which changes the channel member's emotionally powerful attributions for any conflict or opportunism present in the interaction (Weiner 1995) Through this attributional process, perceptions of unfairness should influence the amount of damage that conflict and opportunism cause in the exchange (Hibbard, Kumar, and Stern 2001)

Conceptual Model and Hypotheses

To investigate the mechanisms by which relationship-destroying factors influence channel member performance, we apply dynamic capabilities theory to exchange relationships (Eisenhardt and Martin 2000, Teece, Pisano, and Shuen 1997) As Figure 1 depicts, relationship-destroying factors should negatively affect channel member performance by undermining two key relational behaviors channel member cooperation and flexibility Specifically, channel member cooperation exists when parties work together to achieve their mutual, common goals (Anderson and Narus 1990, Koza and Dant 2007), and channel member flexibility refers to a willingness to be adaptive or adjust in response to changing conditions (Kaufmann and Dant 1992) Eisenhardt and Martin (2000) posit that the crucial ability of an entity to create, extend, or modify its own resource base, in addition to its partners' resources, can generate competitive benefits and performance enhancements For example, business-to-business exchanges often perform poorly because they do not effectively cooperate or adapt, which prevents firms from learning about, combining, using, and adapting their resources in a way that creates value (Buono and Bowditch 1989, Dyer and Singh 1998, Lee, Johnson, and Grewal 2008)

According to extant marketing research, cooperation and flexibility are relational behaviors critical for channel member success because they support sharing and integration of knowledge and resources and help reconfigure resources in response to changing circumstances (Anderson and Narus 1990, Johnson et al 2003, Morgan and Hunt 1994) We focus on cooperation and flexibility rather than other relational constructs (e g , commitment, trust) because they arguably are closer to performance benefits and may capture a wider spectrum of the potentially negative effects of relationship-destroying factors For example, trust and commitment influence performance through cooperation and flexibility (Hewett and Bearden 2001, Johnston et al 2003, Song, Di Benedetto, and Zhao 2008) Thus, if the effects of relationship-destroying factors on performance occur by both undermining trust over time and directly degrading

FIGURE 1
Effects of Relationship-Destroying Factors on Relational Behaviors and Performance



Notes We measured channel member performance one year after relational behaviors, we measured relational behaviors one year after relationship-destroying factors and contract utilization

cooperation or flexibility, our approach should capture both these direct and indirect effects Because relationship-destroying factors can affect performance through many pathways, we must ensure that our mediating constructs capture these full effects

Moderating Role of Perceived Unfairness on the Effects of Conflict

The negative consequences of conflict are significant and include anger, frustration, decreased satisfaction, and dysfunctional behaviors (Frazier, Gill, and Kale 1989, Gaski 1984, Hibbard, Kumar, and Stern 2001) These negative emotions and dysfunctional behaviors can result in a refusal to share knowledge and resources, avoidance of the other party, restricted communication, and sabotage (Jaworski and Kohli 1993, Wall and Callister 1995) When conflict arises, channel member cooperation decreases because the parties may become more agitated and hostile toward each other and less willing to work together (Skinner, Gassenheimer, and Kelley 1992) Channel member flexibility also should suffer in the presence of conflict because firms are less willing to adjust or share information that aids the other party (Jaworski and Kohli 1993, Koza and Dant 2007) Consistent with prior literature, we expect conflict to have negative effects on both channel member cooperation and flexibility

Furthermore, we propose that the negative effects of conflict on channel member cooperation and flexibility become magnified in the presence of perceived unfairness, which suggests an underlying negative motive and intent (Campbell 1999, Kidd and Utne 1978, Weiner 1995) When channel members perceive greater unfairness, they should attribute a greater negative motive to the seller That is, rather than believing the conflict is due to incompatible goals or attitudes (Rahim 2002) or giving the partner the benefit of the doubt, channel members may attribute the conflict to a seller's deliberate intention to capture a greater share of the exchange benefits These channel members are likely to respond more severely to the conflict because they attribute greater intentionality of and controllability over its cause (Betancourt and Blair 1992) When an exchange partner attributes a negative motive to conflict, negative emotions emerge, including anger, which increases the severity of any response to the conflict (Griffith, Harvey, and Lusch 2006) Similarly, Hibbard, Kumar, and Stern (2001, p 48) argue that destructive acts often lead to attributions increasing the "perception of being treated unfairly, [which] causes anger and brings with it a desire for retributive justice "

The presence of perceived unfairness also aggravates existing feelings of anger, rage, and indignation (Mikula 1986), in addition to hate and resentment (Sprecher 1986) The presence of these negative emotions may exacerbate judgments of and negative responses to conflict In turn, when conflict occurs together with unfairness, the dialogue between parties is likely to become more emotional, and thus the desire to punish the offending party increases as the partner looks for ways to retaliate and restore equity (Fehr and Gachter 2000, Kaufmann and Stern 1988, Offerman 2002)

In summary, channel members' responses to conflict should be more emotionally charged and harsher when perceived unfairness increases, such that conflict has a greater negative impact on channel member cooperation and flexibility In the presence of conflict and unfairness, channel members are more likely to withhold information and resources and less likely to accede to requests to adapt, even when they recognize that such actions may be harmful to them

> H_1 Perceived unfairness strengthens the negative effects of channel member conflict on channel member (a) cooperation and (b) flexibility

Moderating Role of Perceived Unfairness on the Effects of Seller Opportunism

Firms that perceive opportunism have a greater need to screen and monitor their partner's behaviors, which results in increased information costs (Nooteboom, Berger, and Noorderhaven 1997, Wathne and Heide 2000, Williamson 1985) The firm spends increasing time monitoring its relationships and may seem more hesitant to rely on its partners, such that collaboration and coordination become more difficult and channel member cooperation likely suffers If channel members perceive sellers' opportunism, they also may conclude that they have been too lenient and need to be more restrictive to curb that opportunism Such restrictiveness and rigidity will likely diminish channel member flexibility Previous research has suggested that the consequences of opportunism include reduced cooperation and flexibility (Das and Teng 1998, Gundlach, Achrol, and Mentzer 1995, Wathne and Heide 2000)

We expand on that research by proposing that the negative effects of opportunism on channel member cooperation and flexibility increase when perceived unfairness is present When opportunism exists without unfairness, firms may be willing to overlook its occurrence, particularly because a certain degree of opportunism seems inevitable (Williamson 1985) Therefore, channel members may view both passive and active forms of opportunism as normal, day-to-day business activities and not retaliate harshly for opportunism up to some implicit "*tolerance limit*" (Wathne and Heide 2000, p 48, italics in original)

However, when unfairness occurs, the channel member is likely to attribute negative motives to the observed opportunistic behaviors (Campbell 1999, Weiner 1995) and infer that much of the opportunism reflects its seller's negative motive and intent rather than a normal consequence of business activities Then, the channel member would retaliate more severely in response to opportunistic behaviors, particularly because it now seems to be a willful violation of equity norms rather than an inescapable component of doing business (Gundlach, Achrol, and Mentzer 1995, Wathne and Heide 2000, Williamson 1985)

Moreover, unfairness and opportunism in combination are likely to make the victimized party feel like the target of dual expropriation The presence of unfairness indicates that the party's outcomes and rewards are lower than they should be, given its efforts or contributions (Adams 1965), the presence of opportunism implies that the partner is expropriating additional quasi rents and resources from the victim through guile (Hill 1990) The combined expropriation of value through both unfair and opportunistic actions likely angers the victimized partner and causes a much stronger emotional backlash than if the victim had experienced opportunism or unfairness in isolation Although both opportunism and unfairness cause the channel member to infer negative motives, the underlying inferences are different For example, opportunism, because of its "guile" association, could cause the channel member to infer that the seller is trying to sneak or hide its action, but guile has no relation to inferences about equity or fairness A seller could be acting in self-interest but still provide a fair balance of benefits to costs, that is, it could be simply trying to get its fair share by using guile Perceptions of unfairness do not require guile but still are judged by the channel member as inequitable from a benefit-to-cost ratio standpoint Thus, both constructs lead to negatively valenced inferences that differ qualitatively in their characteristics (i e , sneaky vs unfair)

Dual expropriation through both unfairness and opportunism also should motivate channel members to seek redress to restore its equity (Adams 1965, Kidd and Utne 1978) As they seek ways to restore equity, these channel members may focus more intensely on existing opportunism, particularly if they believe that doing so will help recapture the lost benefits they believes they rightfully deserve Thus, extant opportunism that otherwise may have been overlooked begins to receive greater scrutiny and attention and likely results in greater punishment and retaliation Because the channel member spends more time scrutinizing and punishing its opportunistic seller, it likely expends less time or effort cooperating or behaving flexibly Therefore, we hypothesize that channel member cooperation and flexibility should suffer more from opportunism when it is accompanied by perceptions of unfairness

> H_2 Perceived unfairness strengthens the negative effects of seller opportunism on channel member (a) cooperation and (b) flexibility

Moderating Role of Contract Utilization on the Effects of Relationship-Destroying Factors

Contracts can play important roles in governing interorganizational relationships They help clarify roles and responsibilities, guide interorganizational behaviors and outcomes, and specify adaptive processes to resolve unforeseeable issues (Lusch and Brown 1996) However, unlike prior research in contractual governance and transaction cost economics, we do not investigate whether a firm should adopt a contract or what the optimal contract structure is (Brown, Cobb, and Lusch 2006, Ghosh and John 2005, Heide 1994, Lusch and Brown 1996) Rather, we focus on the moderating role of contract utilization, or how frequently the channel member and seller employ a contract to manage their exchange relationship

We emphasize contract utilization rather than contractual structure, design, or deployment for several reasons First, a rich body of preexisting literature has already addressed these issues (Brown, Cobb, and Lusch 2006, Heide 1994, Lusch and Brown 1996) However, much less research has investigated how using a contract (given that one exists) influences marketing relationships, particularly in the presence of multiple relationship-destroying factors Second, in our sample, a contract existed for all exchanges before the commencement of each seller–channel member relationship Third, our goal is not to investigate the antecedents of conflict, opportunism, or unfairness or how a firm can prevent these relationship-destroying factors Rather, we expect that some level of conflict, opportunism, and unfairness exists in all interorganizational exchanges, and we want to understand how the use of contracts to manage the interaction might moderate their effects on outcomes

When conflict and opportunism escalate to the point that they begin to influence the relationship noticeably, exchange partners often rely on existing contracts to mitigate the potential negative effects (Heide 1994, Joskow 1987) For example, business partners may use contracts to resolve disputes or to ensure that a partner is meeting its obligations Although contract utilization may not resolve the conflict or opportunism, it can help suppress the related negative influences by reducing behavioral uncertainty and motivating compliance (Celly and Frazier 1996) Exchange partners can be required to uphold their agreements, even if they prefer not to do so, because the contract provides a framework or process to maintain cooperation and flexibility, even under duress Contracts also might include clauses that require parties to work together to achieve mutual goals or outline how interorganizational exchanges should be conducted in various circumstances By incorporating such guidelines for dealing with contingencies, contracts can help partners maintain their cooperation and flexibility, even when they face the potential negative effects of conflict and opportunism

H_3 Contract utilization suppresses the negative effects of channel member conflict on channel member (a) cooperation and (b) flexibility

H_4 Contract utilization suppresses the negative effects of seller opportunism on channel member (a) cooperation and (b) flexibility

However, the use of contracts in the presence of perceived unfairness may aggravate the negative effects of unfairness on exchange outcomes Perceptions of unfairness are relative, and channel members make these evaluations according to their innate sense of what is fair or equitable between relational partners, independent of contractual agreements (Austin, Walster, and Utne 1976, Fehr and Gachter 2000) For example, if a channel member complains about an unfair distribution of costs and benefits and the seller uses the contract to support its actions, the channel member may become angry and retaliate, in accordance with its sense that the seller is taking advantage by using the "letter" of the contract (Brown, Cobb, and Lusch 2006) The use of a contract to maintain or extract an unfair portion of the relative benefits violates universal equity norms, which operate independent of existing contracts, and likely generates extreme responses or punitive behaviors (Kidd and Utne 1978, Utne and Kidd 1980) Such retaliatory behaviors might include failing to cooperate the next time the seller requests help or purposely not adapting to changing conditions to reduce the benefits the seller receives, even if these behaviors have costs for the channel member (Turillo et al 2002) Our argument mirrors Kaufmann and Stern's (1988) finding that buyer–seller negotiations that seem to betray existing norms lead to greater hostility Thus, when unfairness is accompanied by frequent contract usage, a channel member should respond to the unfairness more severely than if the seller did not use the contract to manage the relationship Therefore, we hypothesize that perceived unfairness should have a greater negative effect on channel member cooperation and flexibility when it is associated with frequent contract usage

H_5 Contract utilization aggravates the negative effects of perceived unfairness on channel member (a) cooperation and (b) flexibility

Effect of Relational Behaviors on Channel Member Performance

Cooperation helps firms access and leverage the complementary resources and competencies of their exchange partners A partnership without cooperation may limit knowledge transfers between firms, as well as the joint efforts and synergies needed to undertake successful projects and achieve their mutual interest goals Cooperation also facilitates the flow of information and communication across firms, which can help overcome incompatibilities in organizational structures Moreover, it should facilitate the exchange of skills and processes that enhance performance, and it can help integrate and combine resources across organizational boundaries to achieve shared goals In short, cooperation is necessary for partners to access the full benefits, capabilities, and resources of their interorganizational relationships It is difficult to overstate the central role of cooperation for relationship marketing and, more specifically, superior success and performance As Morgan and Hunt (1994, p 25) recognize, "the crucial factor of cooperation promote[s] relationship marketing success" Jap (1999) finds support for the notion that coordination efforts in a dyadic relationship can lead to enhanced performance In addition, prior research has shown that cooperation is a necessary component for success in channel relationships (Frazier and Rody 1991)

H_6 Channel member cooperation positively affects channel member performance

Whereas cooperation indicates a willingness to work with partners, channel member flexibility refers to a willingness to be adaptive or adjust in response to changing conditions Flexibility enables firms to adapt policies and procedures that they then can use to leverage interorganizational resources more efficiently, which enhances their synergies and performance Flexibility also represents a willingness to respond to changes and accommodate partners as those needs arise or unforeseen events develop (Heide and John 1992, Wathne and Heide 2000)

Johnson et al (2003) propose flexibility as a performance enhancer because it enables the firm to take advantage of opportunities as they arrive In situations without opportunities, it helps the firm generate its own opportunities by being proactive They also suggest that market-focused flexibility results in improved performance, and Grewal and Tansuhaj (2001) demonstrate that flexibility exerts a positive influence on a firm's performance after a crisis

H_7 Channel member flexibility positively affects channel member performance

Research Method and Results

Sample and Data Collection Procedure

The data for this research came from a multiyear survey of channel relationships between a large *Fortune* 500 firm (seller) and its resellers (channel members) The seller offers a large array of diversified products, including appliances, automotive items, clothing, electronics and computers, fitness and sports products, home products, and more The vast diversity associated with this sample should help minimize any product-specific category effects In addition, it offers greater generalizability than samples that contain only a few product lines

The key informants were the owner or senior manager of each channel member firm The seller solicited the research team to conduct a channel member survey and provided the addresses of all channel members (resellers) We gathered the data in three successive annual surveys of senior managers of channel members Each survey wave included all constructs, and all the measures and items associated with each construct remained the same for the duration of the study The sampling frames for the three years were 1651, 1837, and 1965 and represented the census of channel members in those years The questionnaires were sent by mail, together with a cover appeal letter from the relevant vice president and a postage-affixed reply envelope addressed to the research team As incentives, the channel members were entered into a random draw for four $500 gift certificates that were awarded each year We received 984 completed and usable questionnaires in Year 1 (response rate = 59 6%), 1004 in Year 2 (response rate = 54 7%), and 1089 in Year 3 (response rate = 55 4%) The questionnaires were mailed out once each year, and identical survey procedures were followed in all three years Because we lagged the variables in each stage of our model by one year to control for common method bias and establish causality in our analysis, we lost some data In addition, missing values and noncontiguous responses (e g , a channel member responded in Year 1 and Year 3 but not in Year 2) forced us to exclude additional survey responses when we matched the surveys across years Therefore, we obtained a total of 1060 usable survey responses from 492 unique channel members for our final analysis

We assessed possible nonresponse bias with three approaches First, we conducted tests to compare early and late respondents for all three periods, according to their demographic information and study constructs The results indicated that these respondents constituted the same population ($p > 05$) Second, we compared the respondents retained for the analysis with those we excluded because they had failed to complete all the questions for all three periods According to univariate and multivariate analyses of variance, the results did not differ across these two samples ($p > 05$) Third, we compared the demographic variables for the total sample of channel members who received the questionnaires with the variables for only those channel members who responded, again, we found no significant differences ($p > 05$) The relatively high response rates, coupled with these test results, suggested that nonresponse bias was not a concern

Measurement

We based our multi-item measures on extant literature, drawing from scales that had undergone prior psychometric testing We report the scales, item loadings for each year, and literature sources in Appendix A All items used a five-point, Likert-type scale anchored by 1 = "strongly disagree" and 5 = "strongly agree," except the conflict items, which were anchored by 1 = "very infrequently" and 5 = "very frequently"

We tested three confirmatory measurement models by including all latent constructs in one model for each year of data We restricted each item's loading to its a priori construct and correlated each construct with all other constructs in the model The measurement fit indexes for the confirmatory measurement models achieved the following ranges comparative fit index = 95–96, root mean square error of approximation = 04–05, and Tucker–Lewis index = 94–95 All factor loadings were significant ($p < 01$), in support of convergent validity The composite reliabilities for the latent constructs over all three years ranged from 83 to 94, indicating internal reliability Table 2 reports the descriptive statistics and correlations

Next, we assessed discriminant validity with two approaches First, we determined the average variance extracted for each construct and verified that it was greater than the corresponding shared variances (intercorrelation^2) for all possible pairs of constructs Second, we analyzed all possible pairs of constructs in a series of two-factor confirmatory measurement models We ran each model twice—once constraining the correlation between the two constructs to unity and once with a free estimation of the correlations—and then performed a chi-square difference test In each case, the tests supported discriminant validity ($p < 01$)

We measured constructs with hypothesized relationships with one year of temporal separation to reduce common method bias as a potential confound for our results, as an additional check for common method variance, we performed the Harman one-factor test for each year In each case, we identified nine factors with eigenvalues greater than 1 0 These nine factors accounted for 75% to 77% of the total variance, and the largest factor accounted for 26% to 28% of the total variance Thus, more than one factor emerged from the factor analysis, and the largest factor did not account for a majority of the total variance, so common method bias does not seem to be a significant concern

Analysis and Model Development

We tested our conceptual model using hierarchical linear modeling (HLM) to account for the nesting of repeated survey responses within channel members over time Multi-

TABLE 2
Descriptive Statistics and Correlations

				Correlations							
Constructs	M	SD	Extracted Variance	1	2	3	4	5	6	7	
1 Channel member cooperation	4 14	60	77	93							
2 Channel member flexibility	3 78	73	64	51**	84						
3 Seller opportunism	2 23	75	70	− 45**	− 42**	90					
4 Perceived unfairness	2 90	88	72	− 47**	− 42**	26**	89				
5 Channel member conflict	2 10	77	50	− 37**	− 35**	31**	35**	83			
6 Contract utilization	1 97	80	67	− 28**	− 25**	49**	08*	22**	89		
7 Channel member performance	3 99	69	84	33**	32**	− 16**	− 24**	− 16**	− 06*	94	
8 Total interdependence	6 65	1 33	N A	17**	13**	− 04	− 09**	− 06	02	16**	N
9 Interdependence asymmetry	97	82	N A	− 02	00	02	03	01	− 01	05	−
10 Relationship age	6 46	6 19	N A	00	− 01	00	− 01	05	− 04	− 05	−
11 Competitive intensity	29 65	42 30	N A	01	03	− 03	03	− 07*	− 05	− 01	
12 Firm size	1 94	2 50	N A	00	00	00	03	03	− 02	− 03	−

*p < 05

**p < 01

Notes Composite reliabilities are presented along main diagonal, N A = not applicable The results reported in this table are pooled results across Ye level data arise when the data reflect a hierarchical structure (Raudenbush and Bryk 2002). Statistical models for multilevel data must account for the intracluster correlation at each level; failure to do so may result in misleading inferences. Longitudinal or repeated measures data may be considered as a special case of multilevel data, such that repeated measurements over time cluster within persons. Fitzmaurice, Laird, and Ware (2004, p. 441) associate multilevel and longitudinal data by stating that "longitudinal data are a special case of multilevel data, with only a single level of clustering and a natural ordering of the measurements within a cluster." In addition, using a dummy variable approach to account for 492 unique firms would require a large number of parameters to be estimated and thus reduce statistical power, which we avoid by using HLM.

In our data set, the repeated survey responses over time (Level 1 data) were clustered within each channel member (Level 2 data), such that we had multiple survey responses over time for each channel member. Previous studies have similarly used HLM to account for repeated responses/longitudinal data (Gruca and Rego 2005; Liu 2007; Mitra and Golder 2008). Using full maximum likelihood as our estimation method facilitated our comparison of model fits across nested models. We mean-centered all variables to increase the interpretability of our model results, and all variance inflation factors were less than 2.0.

We began our analysis by modeling channel member cooperation (Model 1) and channel member flexibility (Model 2) as functions of channel member conflict, seller opportunism, perceived unfairness, contract utilization, and their hypothesized interactions (Table 3). We allowed the intercepts to vary randomly across channel members and included three control variables in the model: total interdependence, interdependence asymmetry, and relationship age. Prior research has shown that these exchange characteristics influence exchange behaviors (Hibbard, Kumar, and Stern 2001; Palmatier, Dant, and Grewal 2007). Consistent with Kumar, Scheer, and Steenkamp (1995a, 1998), we operationalized total interdependence as the sum of the seller's and channel member's dependence scores, and we operationalized interdependence asymmetry as the absolute value of the difference between their dependence scores. Finally, relationship age was the number of years that each channel member firm had been doing business with the seller.

Similarly, we tested our hypotheses about the effects of channel member cooperation and flexibility on channel member performance (Model 3). Channel member performance captures the channel member's (reseller's) sales and profit performance pertaining only to the seller's products. We allowed the intercepts to vary randomly across channel members and modeled the varying intercepts as a function of two channel member–level control variables that affect exchange performance: competitive intensity and firm size. We operationalized competitive intensity by including the distance between each authorized channel member and the nearest other authorized channel member (competitor). All else being equal, low competitive intensity likely aids firm performance because "customers are stuck with the organization's products and services" (Jaworski and Kohli 1993, p. 57). For firm size, we used the total number of employees who worked for each channel member firm. Larger organizations may experience increased complexity and bureaucracy, as well as a greater rigidity, as they attempt to deal with more layers and more employees. As a result, we might expect larger firms to realize lower performance for a given level of channel member cooperation and flexibility. In Appendix B, we present detailed information about the different multilevel models. Table 3 summarizes the results.

Results

As Models 1 and 2 in Table 3 illustrate, we found support for our assertion that perceived unfairness aggravates the negative effects of both channel member conflict and seller opportunism. With regard to channel member conflict, unfairness enhances the negative influences of conflict on channel member cooperation ($\beta = -.08$, $p = .01$) and on channel member flexibility ($\beta = -.05$, $p = .08$), in support of H_{1a} and H_{1b}, though the interaction of unfairness and conflict on channel member flexibility is only marginally significant. Perceived unfairness also aggravates the negative effects of seller opportunism on both channel member cooperation ($\beta = -.07$, $p = .03$) and channel member flexibility ($\beta = -.07$, $p = .02$), thus providing support for both H_{2a} and H_{2b}.

To improve our understanding of the role of perceived unfairness with regard to the effects of conflict and opportunism on channel member cooperation and flexibility, we conducted post hoc graphical analyses. In Figure 2, we illustrate the impact of high and low levels of conflict and opportunism on cooperation (Panel A) and flexibility (Panel B) for high and low levels of perceived unfairness. The negative effects for high levels of unfairness on outcomes were greater at higher levels of conflict and opportunism (i.e., greater negative slopes). However, when perceived unfairness was low, the effect of conflict and opportunism on outcomes varied only slightly between the high and low levels of conflict or opportunism (i.e., near overlap of points on the far left sides of Figure 2, Panels A and B, with low unfairness).

As an additional test of these surprising findings, we median-split our sample into high- and low-unfairness groups and evaluated the correlations between conflict/opportunism and cooperation/flexibility. For the low-unfairness group, the correlations of flexibility with conflict and opportunism were not significant ($p > .05$); at low levels of unfairness, conflict and opportunism had little effect on the flexibility of the relationship. In contrast, for the high-unfairness group, the correlations of flexibility and conflict/opportunism were significant ($p < .01$) and negative ($r_{\text{conflict}} = -.32$, $r_{\text{opportunism}} = -.44$).

The correlations involving cooperation were significant for the low-unfairness group ($r_{\text{conflict}} = -.17$, $r_{\text{opportunism}} = -.13$) but substantially lower in magnitude than those for the high-unfairness group ($r_{\text{conflict}} = -.39$, $r_{\text{opportunism}} = -.36$). Taken together, our results suggest that the negative effects of conflict and opportunism on channel relationships represent a significant concern mainly in the presence of substantial perceived unfairness, which reinforces the key role of unfairness with regard to understanding the effects of other negative behaviors.

We also found that contract utilization suppressed the negative effects of conflict on flexibility ($\beta = .07$, $p = .03$)

TABLE 3
Regression Results for Channel Members' Performance

		Model 1: Channel Member Cooperation		Model 2. Channel Member Flexibility		Model 3: Channel Member Performance	
Constructs	**Hypotheses**	**Estimate**	**p-Value**	**Estimate**	**p-Value**	**Estimate**	**p-Value**
Intercept		03	38	00	96	01	87
Interactions							
Perceived unfairness × channel member conflict	H_{1a}, H_{1b}	– 08***	01	– 05*	08		
Perceived unfairness × seller opportunism	H_{2a}, H_{2b}	– 07**	03	– 07**	02		
Contract utilization × channel member conflict	H_{3a}, H_{3b}	04	13	07**	03		
Contract utilization × seller opportunism	H_{4a}, H_{4b}	03	11	07***	00		
Contract utilization × perceived unfairness	H_{5a}, H_{5b}	– 06**	04	– 13***	00		
Main Effects							
Channel member conflict		– 17***	00	– 09***	01		
Seller opportunism		– 10**	01	– 21***	00		
Perceived unfairness		– 27***	00	– 20***	00		
Contract utilization		– 11***	01	– 03	41		
Channel member cooperation	H_6					14***	00
Channel member flexibility	H_7					13***	00
Control Variables							
Total interdependence		11***	00	07*	07		
Interdependence asymmetry		03	43	04	21		
Relationship age		– 01	69	00	90		
Competitive intensity						– 02	63
Firm size						00	94
Deviance (–2 log-likelihood)		1673 8		1696 9		1832 6	

*p < 10
**p < 05
***p < 01
Notes Standardized estimates and accompanying p-values are reported

but not on cooperation (β = 04, p = 13), providing support for H_{3b} but not H_{3a} Contract utilization also suppressed the negative effects of seller opportunism on flexibility (β = 07, p < 01) but not on cooperation (β = 03, p = 11) Thus, we also found support for H_{4b} but not for H_{4a}

Finally, and in strong support of H_5, contract utilization aggravated the negative effects of perceived unfairness, in that their interactions were negative and significant for both cooperation (β = – 06, p = 04) and flexibility (β = – 13, p < 01) Using contracts to manage a channel relationship aggravated the negative effect of perceived unfairness on relational outcomes Of the three control variables included in the models, only total interdependence had a significant effect on channel member cooperation (β = 11, p < 01) and flexibility (β = 07, p = 07), though its effect on channel member flexibility is only marginally significant

With regard to Model 3 (Table 3), we found that both channel member cooperation and flexibility significantly enhanced channel member performance, in strong support of both H_6 (β = 14, p < 01) and H_7 (β = 13, p < 01) Neither of the control variables (i e , competitive intensity or firm size) had a significant effect on channel member performance

Alternative Models

To provide further support for our conceptual model and guidance for further research, we conducted several additional post hoc tests Parallel to our argument that unfairness aggravates the negative effects of conflict on relational behaviors because the channel member attributes negative motives to the observed conflict, the case can be made that opportunism may aggravate the negative effects of conflict, in that the channel member might infer negative motives from the deception aspect of opportunism [1] In line with this logic, we included the interaction between conflict and opportunism in Models 1 and 2 Neither interaction was significant (p > 10), suggesting that conflict and opportunism operate independently

Similar to our rationale that contract utilization plays a role in aggravating or suppressing the effects of relationship-destroying factors on relationship performance, we explored whether other factors play similar roles in moderating the effects of relationship-destroying factors by conducting a series of post hoc moderation tests Specifically, we investigated whether two positive relational elements help shelter a

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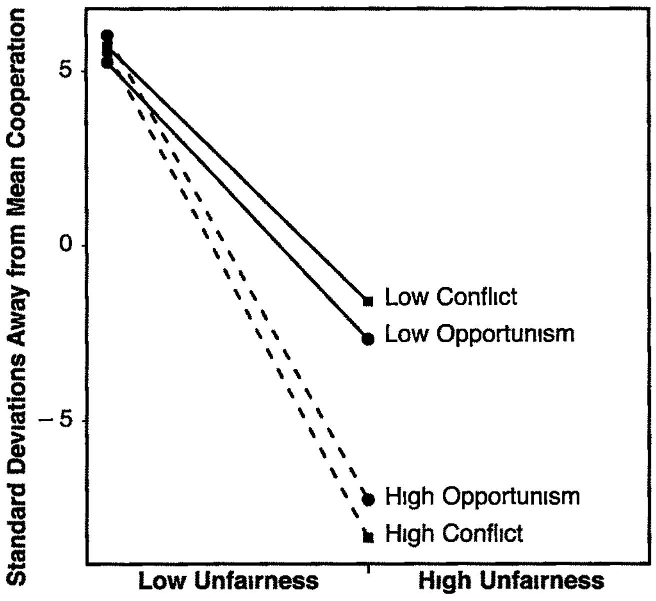
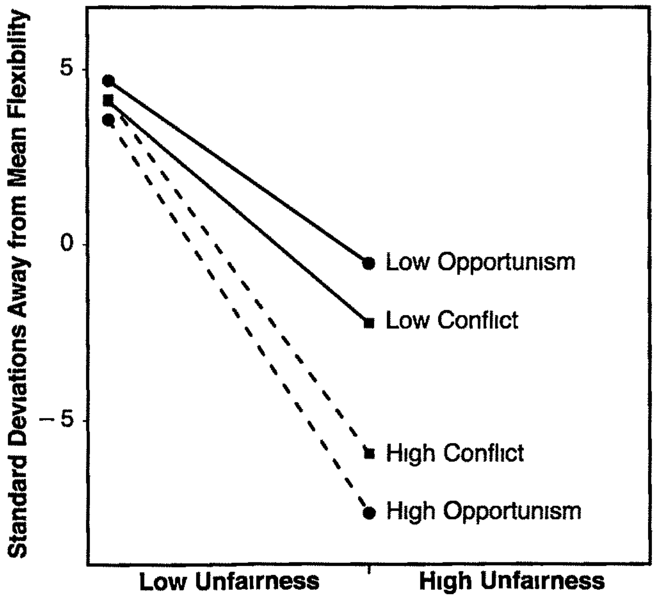
[1] We thank an anonymous reviewer for this insight

FIGURE 2
Effects of Negative Behavior Interactions on Cooperation and Flexibility for Low and High Unfairness

A: Effects on Cooperation



B: Effects on Flexibility



Notes Dashed lines represent high levels of negative behaviors, and solid lines represent low levels of negative behaviors

relationship from the harmful effects of conflict, opportunism, and unfairness by interacting total interdependence and relationship age with each relationship-destroying factor Being locked into a highly interdependent relationship or simply having a long history together may cause channel members to ignore negative events or minimize retaliatory actions, which could suppress the negative effects of relationship-destroying factors on behavior (Jap and Ganesan 2000, Kumar, Scheer, and Steenkamp 1995a, b) We also investigated whether interdependence asymmetry aggravates the negative effects of relationship-destroying factors as a result of attributions of negative motives possibly stemming from concerns about a partner using its power in a coercive manner (Kumar, Scheer, and Steenkamp 1998) We conducted 18 post hoc moderation tests (3 moderators × 3 relationship-destroying factors × 2 outcomes) and added the interactions to Models 1 and 2 (The models already include the main effects of the control variables) Only 2 of the 18 proposed interactions were supported, suggesting that the effects of the relationship-destroying factors on relational behaviors are relatively resilient to exchange conditions

Discussion

Relationships almost invariably become damaged, understanding how is critical for long-term business success Therefore, this study attempts to improve understanding of how and when relationship-destroying factors affect business performance Specifically, we developed and empirically tested a conceptual model of the simultaneous effects of three relationship-destroying factors (conflict, opportunism, and unfairness) on channel member cooperation, flexibility, and, ultimately, performance The results of our longitudinal analysis showed that perceived unfairness truly acts as relationship poison It directly damaged channel relationships, aggravated the negative effects of both conflict and opportunism, and undermined the benefits of using contracts to manage the distribution channel We now discuss these results in line with two recommendations (1) how to manage the negative effects of unfairness and (2) how to use contracts effectively in the presence of relationship-destroying factors

Managing the Effects of Unfairness

Of all the relationship-destroying factors we studied, perceived unfairness had the greatest impact on channel member cooperation and flexibility Managing channel member conflict and seller opportunism are important, but reducing perceived unfairness seems more critical because it has large direct and indirect effects on channel relationship success Firms might manage perceived unfairness in several ways First, managers should include unfairness measures in their channel member surveys to gauge the firm-specific influence Firms may find that the role of perceived unfairness is especially informative for their lost customer analyses For example, research shows that perceptions of unfairness drive emotionally based punitive and retaliatory behaviors, so firms may want to determine whether perceptions of unfairness played a role in their customers' defections—especially if those customers needed to overcome high switching costs (Fehr and Gachter 2000, Offerman 2002, Turillo et al 2002) Second, focus groups and other forms of qualitative research may give managers a more explicit understanding of the specific areas (e g , returns, pricing, loyalty programs) in which unfairness is particularly problematic or leads to a high level of negative word of mouth

Understanding the true effects of relationship-destroying factors requires a multitheory, holistic approach because, in addition to its direct effects, unfairness aggravates the effects of both conflict and opportunism The results from our sample suggest that the negative effects of conflict and opportunism mattered little if unfairness was low, therefore, managers should consider resolving unfairness issues before tackling conflict and opportunism to minimize its leveraging effect (Figure 2)

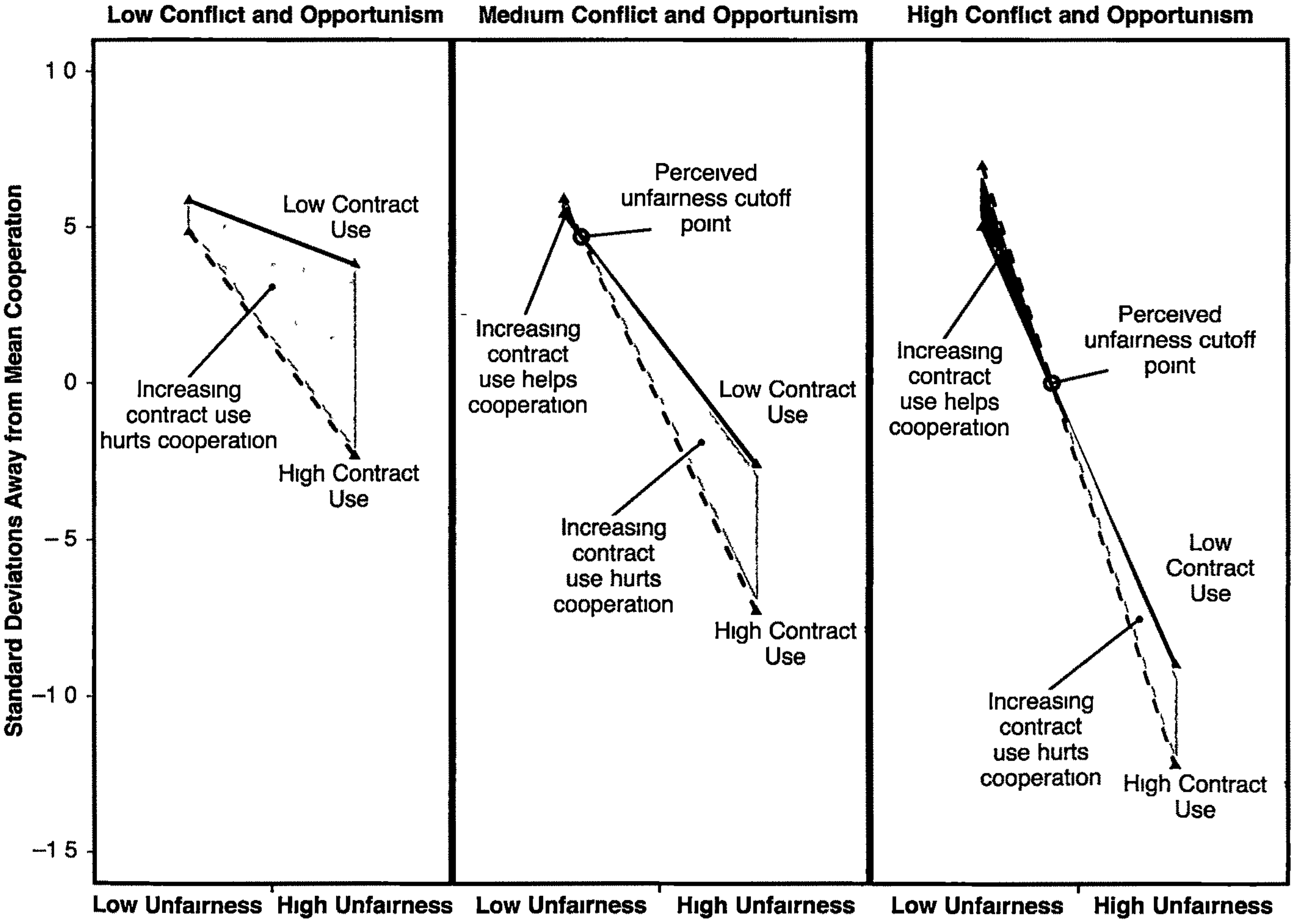
Firms also should consider more preemptive or proactive approaches to reducing unfairness For example, they could develop specific training programs that stress the importance of fairness, identify the types of situations most likely to generate unfairness perceptions, and suggest preventative strategies Managers who understand the importance of proactively managing unfairness will be better equipped to increase the quality of their channel relationships and prevent the loss of high-value channel members to relationship-poisoning inequity perceptions

Managing Contract Utilization in the Presence of Relationship-Destroying Factors

The toxic effects of unfairness are not limited to direct effects or the aggravation of other negative behaviors, unfairness can cause contract utilization to harm, rather than help, channel relationships This finding suggests a means to reconcile prior research that indicates that contracts both help and undermine relationships (e g , Brown, Dev and Lee 2000, Jap and Ganesan 2000, Joskow 1987, Wuyts and Geyskens 2005) Our results highlight an important trade-off inherent in the use of contracts in interorganizational relationships On the one hand, contract use can help suppress the negative effects of conflict and opportunism on relationships On the other hand, it can aggravate the negative effects of unfairness Therefore, the benefits of using a contract to suppress the negative effects of conflict and opportunism seem to be offset by its aggravation of the negative effects of unfairness These results lead to an important question When is it effective for firms to use existing contracts to manage distribution channels?

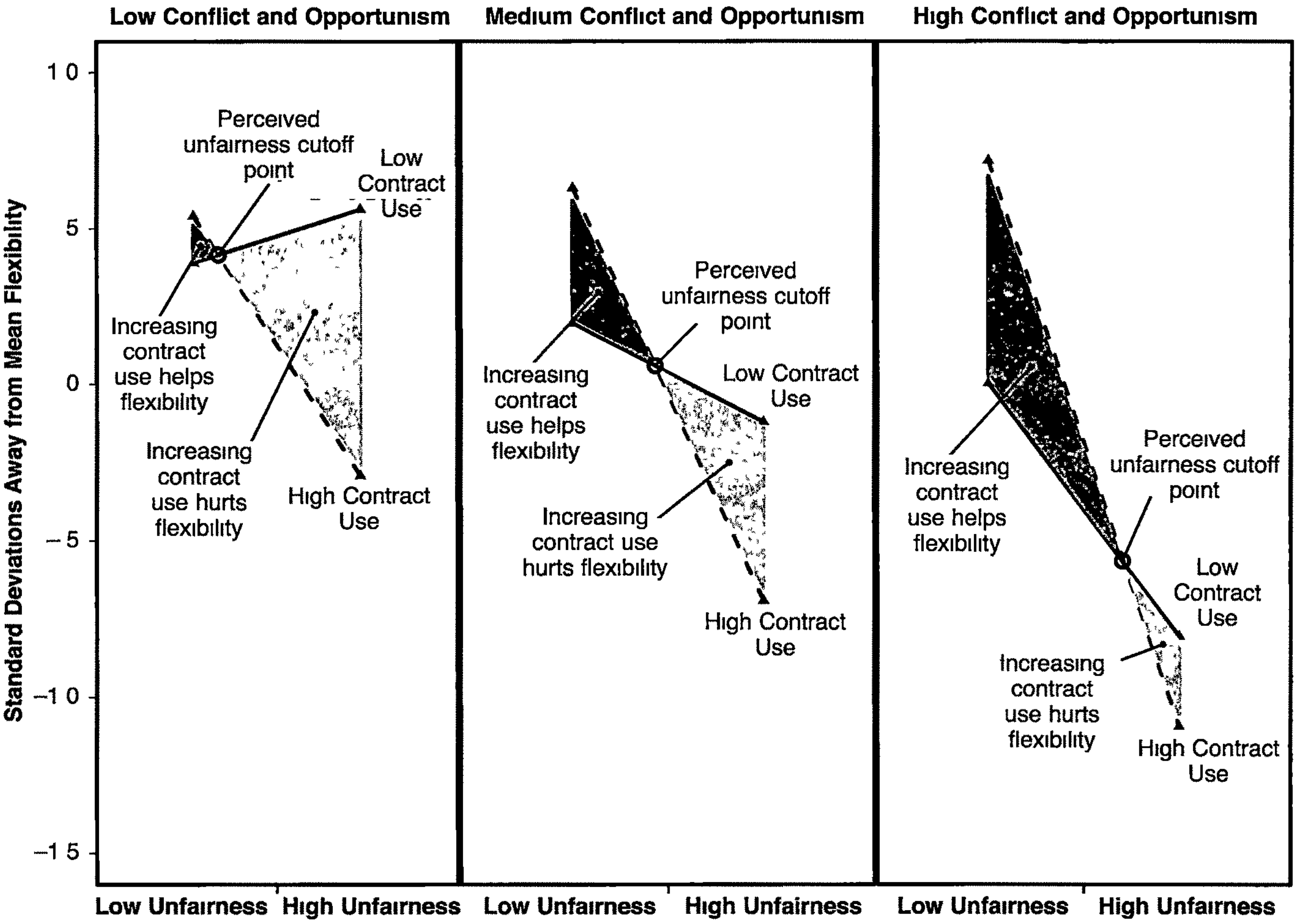
The effectiveness of contract use is not static but rather depends on the relative levels of conflict, opportunism, and unfairness Positive net benefits may result from contract use if the levels of unfairness are not too high We derive the cutoff point at which contract use becomes a net liability in Appendix C, we graphically illustrate these results for

FIGURE 3
Analysis of the Effect of Contract Utilization on Cooperation



Notes Dashed lines represent high contract utilization, and solid lines represent low contract utilization, dark shading represents regions in which increasing reliance on contract utilization improves interfirm cooperation, light shading represents regions in which increasing reliance on contract utilization hurts cooperation

FIGURE 4
Analysis of the Effect of Contract Utilization on Flexibility



Notes Dashed lines represent high contract utilization, and solid lines represent low contract utilization, dark shading represents regions in which increasing reliance on contract utilization improves interfirm flexibility, light shading represents regions in which increasing reliance on contract utilization hurts flexibility

both cooperation (Figure 3) and flexibility (Figure 4) Firms could perform similar trade-off analyses to determine where their firms typically operate and to gain insight into the most effective utilization of contracts in their day-to-day operations Furthermore, to reveal the interdependencies of relative levels of conflict/opportunism and unfairness and when contract use has a net positive or negative effect, we graph the cutoff point at three levels of conflict and opportunism low (one standard deviation below the mean), medium (mean), and high (one standard deviation above the mean)

In five of the six scenarios in Figures 3 and 4, it is advantageous to increase contract utilization in some regions (dark gray) but better to decrease contract use in others (light gray) This finding supports the relevance of this analysis because the cutoff point falls within the range of our sample The intersections of the low and high lines corresponding to contract use represent cutoff points beyond which increasing contract utilization is no longer a winning strategy

Using Figures 3 and 4, we also illustrate the trade-off between contract utilization's benefits and harms In general, increasing contract utilization is more advantageous when conflict and opportunism are high rather than low Intuitively, at high levels of conflict and opportunism, the suppressive effects of contract utilization should be greater and therefore should make the strategy more effective From a managerial perspective, these graphs reiterate that firms should not use a contract to manage one negative behavior at a time but rather must consider the joint implications of contract use on other negative behaviors For example, a firm cannot blindly rely on contracts to suppress opportunism, it should also consider the potential downsides associated with aggravating unfairness perceptions

Contract utilization also had a significant, negative direct effect on cooperation, implying that frequent contractual enforcement may diminish cooperation by creating a more formal, adversarial relationship environment Further research on contractual governance should extend beyond simply "having" versus "not having" a contract to include the impact of using or referring to a contract for day-to-day exchange management

Limitations and Further Research

Although the data came from a large company with substantial product breadth, there is always some concern that the results may be idiosyncratic to this firm or industry Using longitudinal data mitigates some concern (e g , common method variance) but also introduces other issues, such as potential confounds caused by intervening events (Rindfleisch et al 2008) Further research should try to confirm our findings with data in other industries and from other contexts

Marketing programs (e g , pricing, customer acquisition, loyalty programs) should be reevaluated in light of our results to determine whether they actually lead to perceptions of unfairness, such that the positive effects of the program may be overwhelmed by its negative effects (e g , perceived unfairness) For example, do the positive effects of customers who receive special treatment (e g , discounts, free shipping, extra benefits) outweigh the negative effects induced by the unfairness perceived by other customers, who may not receive these same benefits (i e , bystander effect)? Studies outside marketing demonstrate that negative effects can eclipse positive effects, but we still cannot identify the extent to which this suggestion holds true in marketing relationships In turn, additional research should investigate the most effective intervention strategies to minimize the damaging effects of perceived unfairness If a channel member feels unfairly treated, how should the supplier mitigate the negative effects?

Our study uses a multitheoretical approach to build the model, but each theoretical perspective has its own boundary conditions and epistemology Although beyond the scope of this study, researchers in the future should investigate the conditions in which each theoretical perspective is most relevant For example, in conditions of high environmental uncertainty, does one particular relationship-destroying factor outweigh the effects of the other factors?

APPENDIX A
Scale Sources and Standardized Item Loadings

	Standardized Item Loadings		
Constructs and Measures (Scale Sources)	**Year 1**	**Year 2**	**Year 3**
Channel Member Cooperation (Koza and Dant 2007)			
We can work together well in this business	83	88	86
We can count on [Seller] to be a team player	93	91	94
We look after each others' interests in this relationship	86	85	86
We should describe our relationship as cooperative	88	84	91
Channel Member Flexibility (Kaufmann and Dant 1992)			
We would willingly make adjustments to help out [Seller] when faced with special problems or circumstances	56	60	54
[Seller] willingly makes adjustments to help us out when we are faced with special problems or circumstances	92	91	92
[Seller] gladly sets aside the contractual terms in order to work with us in difficult times	86	87	87
Seller Opportunism (Gundlach, Achrol, and Mentzer 1995; John 1984)			
In working with our firm [Seller]			
Exaggerates its needs in order to get what it wants	73	77	71
Is not always sincere if that helps to promote their own objectives	89	86	88
Alters facts in order to meet their own goals and objectives	76	89	89
Does not negotiate from a good faith bargaining perspective	85	90	89
Perceived Unfairness (Kumar, Scheer, and Steenkamp 1995b)			
Our earnings from [Sellers'] business are fair given (reversed)			
The duties and responsibilities that I perform for [Seller]	84	86	85
What [Seller] earns from its sales through my business	89	88	92
The contributions I make towards [Sellers'] marketing effort in my market	78	82	79
Channel Member Conflict (Kumar, Scheer, and Steenkamp 1995a, b)			
Specifically, how often have there been disagreements between you and [Seller] about			
Merchandise return policies of [Seller]	58	55	58
[Sellers'] commission rates for its partners	69	76	67
Reporting procedures [Sellers'] partners are required to follow	71	82	79
Overheads associated with [Sellers'] business	87	84	86
Shipment and delivery of merchandise	54	54	64
Contract Utilization (adapted from Jap and Ganesan 2000; Lusch and Brown 1996)			
We often have to resort to our formal contract to resolve disputes with [Seller]	73	83	83
We have to frequently point out to [Seller] that their request is beyond the scope of our contract	76	86	82
[Seller] often resorts to our formal contract to resolve disputes with us	78	88	83
[Seller] often reminds us of our contract to ensure that we are meeting our obligations	82	86	78

APPENDIX A
Continued

Constructs and Measures (Scale Sources)	Standardized Item Loadings Year 1	Year 2	Year 3
Contract Utilization (adapted from Jap and Ganesan 2000; Lusch and Brown 1996)			
We often have to resort to our formal contract to resolve disputes with [Seller]	73	83	83
We have to frequently point out to [Seller] that their request is beyond the scope of our contract	76	86	82
[Seller] often resorts to our formal contract to resolve disputes with us	78	88	83
[Seller] often reminds us of our contract to ensure that we are meeting our obligations	82	86	78
Channel Member Performance (adapted from Lusch and Brown 1996)			
As compared to other similar [Seller's] resellers, our performance is very high in terms of			
Sales growth	90	85	83
Profit growth	95	97	99
Overall profitability	93	92	91
Channel Member Dependence (Kumar, Scheer, and Steenkamp 1995a, 1998)			
If for some reason, our relationship with [Seller] ended			
We would suffer a significant loss of income despite our best efforts to replace the lost income	98	66	46
The loss would seriously damage our reputation in this area	51	67	99
Seller Dependence (Kumar, Scheer, and Steenkamp 1995a, 1998)			
If for some reason, we ended our relationship with [Seller]			
Such a loss would seriously hurt the sales of [Seller's] lines in this area	71	66	71
Such a loss would significantly damage [Seller's] reputation in this area	71	82	79
Such a loss would negatively affect the service [Seller's] customers have come to expect in this area	70	68	66

Appendix B
Two-Level and Combined Multilevel Models for Channel Member Cooperation, Flexibility, and Performance

$$\begin{aligned}
\text{Cooperation}_{it} = {} & \beta_{0i} + \beta_1\text{Conflict}_{i(t-1)} + \beta_2\text{Opportunism}_{i(t-1)} \\
& + \beta_3\text{Unfairness}_{i(t-1)} + \beta_4\text{Contract Use}_{i(t-1)} \\
& + \beta_5\text{Unfairness}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_6\text{Unfairness}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_7\text{Contract Use}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_8\text{Contract Use}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_9\text{Contract Use}_{i(t-1)}\text{Unfairness}_{i(t-1)} \\
& + \beta_{10}\text{Total Interdependence}_{i(t-1)} \\
& + \beta_{11}\text{Interdependence Asymmetry}_{i(t-1)} \\
& + \beta_{12}\text{Relationship Age}_{i(t-1)} \\
& + r_{it}, r_{it} \sim N(0, \sigma^2) \qquad \text{(Level 1)}
\end{aligned}$$

$$\beta_{0i} = \gamma_{00} + u_{0i}, u_{0i} \sim N(0, \tau^2) \qquad \text{(Level 2)}$$

$$\begin{aligned}
\text{Cooperation}_{it} = {} & \gamma_{00} + \beta_1\text{Conflict}_{i(t-1)} + \beta_2\text{Opportunism}_{i(t-1)} \\
& + \beta_3\text{Unfairness}_{i(t-1)} + \beta_4\text{Contract Use}_{i(t-1)} \\
& + \beta_5\text{Unfairness}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_6\text{Unfairness}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_7\text{Contract Use}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_8\text{Contract Use}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_9\text{Contract Use}_{i(t-1)}\text{Unfairness}_{i(t-1)} \\
& + \beta_{10}\text{Total Interdependence}_{i(t-1)} \\
& + \beta_{11}\text{Interdependence Asymmetry}_{i(t-1)} \\
& + \beta_{12}\text{Relationship Age}_{i(t-1)} \\
& + r_{it} + u_{0i} \qquad \text{(Combined Equation)}
\end{aligned}$$

$$\begin{aligned}
\text{Flexibility}_{it} = {} & \beta_{0i} + \beta_1\text{Conflict}_{i(t-1)} + \beta_2\text{Opportunism}_{i(t-1)} \\
& + \beta_3\text{Unfairness}_{i(t-1)} + \beta_4\text{Contract Use}_{i(t-1)} \\
& + \beta_5\text{Unfairness}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_6\text{Unfairness}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_7\text{Contract Use}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_8\text{Contract Use}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_9\text{Contract Use}_{i(t-1)}\text{Unfairness}_{i(t-1)} \\
& + \beta_{10}\text{Total Interdependence}_{i(t-1)} \\
& + \beta_{11}\text{Interdependence Asymmetry}_{i(t-1)} \\
& + \beta_{12}\text{Relationship Age}_{i(t-1)} \\
& + r_{it}, r_{it} \sim N(0, \sigma^2) \qquad \text{(Level 1)}
\end{aligned}$$

$$\beta_{0i} = \gamma_{00} + u_{0i}, u_{0i} \sim N(0, \tau^2) \qquad \text{(Level 2)}$$

$$\begin{aligned}
\text{Flexibility}_{it} = {} & \gamma_{00} + \beta_1\text{Conflict}_{i(t-1)} + \beta_2\text{Opportunism}_{i(t-1)} \\
& + \beta_3\text{Unfairness}_{i(t-1)} + \beta_4\text{Contract Use}_{i(t-1)} \\
& + \beta_5\text{Unfairness}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_6\text{Unfairness}_{i(t-1)}\text{Opportunism}_{i(t-1)} \\
& + \beta_7\text{Contract Use}_{i(t-1)}\text{Conflict}_{i(t-1)} \\
& + \beta_8\text{Contract Use}_{i(t-1)}\text{Opportunism}_{i(t-1)}
\end{aligned}$$

$$
\begin{aligned}
&+ \beta_9 \text{Contract Use}_{i(t-1)} \text{Unfairness}_{i(t-1)} \\
&+ \beta_{10} \text{Total Interdependence}_{i(t-1)} \\
&+ \beta_{11} \text{Interdependence Asymmetry}_{i(t-1)} \\
&+ \beta_{12} \text{Relationship Age}_{i(t-1)} \\
&+ r_{it} + u_{0i} \qquad \text{(Combined Equation)}
\end{aligned}
$$

$$
\begin{aligned}
\text{Performance}_{it} &= \beta_{0i} + \beta_1 \text{Cooperation}_{i(t-1)} + \beta_2 \text{Flexibility}_{i(t-1)} \\
&\quad + r_{it}, r_{it} \sim N(0, \sigma^2) \qquad \text{(Level 1)} \\
\beta_{0i} &= \gamma_{00} + \gamma_{01} \text{Competitive Intensity}_i \\
&\quad + \gamma_{02} \text{Firm Size}_i \\
&\quad + u_{0i}, u_{0i} \sim N(0, \tau^2) \qquad \text{(Level 2)}
\end{aligned}
$$

$$
\begin{aligned}
\text{Performance}_{it} &= \gamma_{00} + \gamma_{01} \text{Competitive Intensity}_i + \gamma_{02} \text{Firm Size}_i \\
&\quad + \beta_1 \text{Cooperation}_{i(t-1)} + \beta_2 \text{Flexibility}_{i(t-1)} \\
&\quad + r_{it} + u_{0i} \qquad \text{(Combined Equation)}
\end{aligned}
$$

Appendix C
Derivation of Cutoff Points for Perceived Unfairness

We determine the maximum amount of unfairness allowable in the channel relationship before an increase in contract utilization switches from helping to harming cooperation and flexibility In Figures 3 and 4, we illustrate that the expected levels of channel member cooperation and flexibility depend on the amounts of contract utilization (low versus high) in the channel relationship The solid lines correspond to a channel relationship characterized by low contract use, the dashed lines represent a channel relationship characterized by high contract use For five of the six scenarios in Figures 3 and 4, when unfairness is sufficiently low, the line for high contract utilization lies above the line corresponding to low contract utilization Therefore, increasing contract utilization leads to increases in channel member cooperation and flexibility (dark gray shaded areas) However, after unfairness crosses a certain threshold (i e , intersection of the low and high contract use lines), increasing contract use leads to decreases in channel member cooperation and flexibility (light gray shaded areas) Thus, the intersection of the lines for low and high contract utilization represents the switching point at which contract use changes from helping cooperation and flexibility to undermining them For levels of unfairness above this intersection point, low contract use yields greater expected cooperation and flexibility than high contract use, for levels of unfairness below it, high contract use is more beneficial than low contract use To determine this point analytically, we set the equations corresponding to low and high contract use to be equal and solved for the solution explicitly in terms of unfairness

That is, let $\hat{y}_{(\text{High})it}$ represent the predicted value of a relational behavior (channel member cooperation or flexibility) for firm i at time t when the channel relationship features high contract utilization Let $\hat{y}_{(\text{Low})it}$ represent the predicted value of a relational behavior for firm i at time t when the channel relationship features low contract utilization We determine the intersection point at which the two predicted quantities are equal $\hat{y}_{(\text{High})it} = \hat{y}_{(\text{Low})it}$ or $\hat{y}_{(\text{High})it} - \hat{y}_{(\text{Low})it} = 0$

Setting $\hat{y}_{(\text{High})it} - \hat{y}_{(\text{Low})it} = 0$ and using the models in Appendix B, we find the following

$$
\begin{pmatrix}
\beta_4 \text{High Contract Use}_{i(t-1)} \\
+ \beta_7 \text{High Contract Use}_{i(t-1)} \text{Conflict}_{i(t-1)} \\
+ \beta_8 \text{High Contract Use}_{i(t-1)} \text{Opportunism}_{i(t-1)} \\
+ \beta_9 \text{High Contract Use}_{i(t-1)} \text{Unfairness}_{i(t-1)}
\end{pmatrix}
-
\begin{pmatrix}
\beta_4 \text{Low Contract Use}_{i(t-1)} \\
+ \beta_7 \text{Low Contract Use}_{i(t-1)} \text{Conflict}_{i(t-1)} \\
+ \beta_8 \text{Low Contract Use}_{i(t-1)} \text{Opportunism}_{i(t-1)} \\
+ \beta_9 \text{Low Contract Use}_{i(t-1)} \text{Unfairness}_{i(t-1)}
\end{pmatrix}
= 0
$$

Simplifying, factoring, and solving explicitly for the cutoff point in terms of unfairness yields

$$
\text{Unfairness}_{i(t-1)} = \frac{(-\beta_4 - \beta_7 \text{Conflict}_{i(t-1)} - \beta_8 \text{Opportunism}_{i(t-1)})}{\beta_9},
$$

or, more explicitly,

$$
\text{Unfairness}_{i(t-1)} = \frac{
\begin{array}{l}
(-\hat{\beta}_{\text{Contract Use}} - \hat{\beta}_{\text{Contract Use} \times \text{Conflict}} \\
\times \text{Conflict}_{i(t-1)} - \hat{\beta}_{\text{Contract Use} \times \text{Opportunism}} \\
\times \text{Opportunism}_{i(t-1)})
\end{array}
}{\hat{\beta}_{\text{Contract Use} \times \text{Unfairness}}}
$$

The cutoff point for the amount of perceived unfairness at which increasing contract utilization changes from helping cooperation and flexibility to undermining them depends explicitly on the amount of channel member conflict and seller opportunism present in the channel relationship Thus, our equation captures the trade-off involved with contract use

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Bernd Skiera, Manuel Bermes, & Lutz Horn

Customer Equity Sustainability Ratio: A New Metric for Assessing a Firm's Future Orientation

Securitization is a remarkable financial instrument, it enables securitizers to increase their short-term profits at the expense of the long-term value of their customer base This ability might be tempting for firms, especially because it does not need to be disclosed transparently to stakeholders The authors show how their newly developed customer equity sustainability ratio (CESR) complements customer equity reporting and creates more transparency about the consequences of securitization for future earnings and the riskiness of the underlying business model Their model compares the future value of an existing customer base with current earnings In an empirical study of 38 banks in ten countries, the authors demonstrate the limited transparency of long-term value creation in financial statements Next, they outline the adequacy of CESR for creating more transparency in empirical cases of Countrywide Financial Corporation and nine firms from nonbanking industries They recommend that marketing should play a prominent role in providing stakeholders with substantial information about the long-term value of the customer base

Keywords customer equity, financial reporting, sustainability, securitization, financial crisis, customer equity sustainability ratio

The financial crisis currently disrupting the economic system and banking worldwide is often attributed to securitization (Ryan 2008), an instrument that pools assets with an inherent stream of future earnings to support debt instruments, called asset-backed securities (ABSs), for sale to investors (Greenbaum and Thakor 1987) [1] Banks commonly use securitization to manage their portfolio risk and funding position by transferring loans and the credit risk of their loan portfolios to other investors (Santomero and Babbel 1997) In return, the banks do not hold the loans until maturity in their own books but instead receive earnings from them directly at their present value (PV)

Unfortunately, as the global financial crisis makes clear, the inherent risk of ABSs is difficult to calculate because of their frequent repackaging, most market participants grossly underestimated it (Coval, Jurek, and Stafford 2009) As a consequence, prices for securities dropped dramatically, banks were forced to realize heavy write-downs on their asset bases, and they suffered huge losses and in some cases bankruptcies (for more detailed descriptions, see Demyanyk and Van Hemert 2009, Franke and Krahnen 2008)

These risks are well known, if not fully solved, however, additional problems result from moves toward short-term profit realizations that are inherent to the securitization of loans and come at the expense of long-term value creation The transformation of periodic loan payments into one down payment enables a bank to realize the PV of earnings immediately rather than doing so over the lifetime of the loan

Securitization is not limited to the banking industry Airlines and sport clubs can securitize earnings from ticket sales that will occur over the next few years to realize the earnings in the present rather than spreading them over time Although it remains particularly prevalent in banking, securitization enjoys great popularity in other industries such as telecommunications, utilities, and the music business, it is even used by national governments and other public institutions (Brinkworth 2004, Downey 1999, Ketkar and Ratha 2008)

Supported by accounting rules, managers do not need to make the consequences of securitization for long-term value creation transparent They have incentives to adjust their firm's earnings stream through securitization and reach their own goals, such as greater personal wealth (Dechow and Shakespeare 2009) However, the problems that arise from such adjustments in customer management

---

[1] We use ABS to refer to the whole group of structured products, which can be classified into asset-backed commercial papers, mortgage-backed securities, and collateralized debt obligations

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ISSN 0022-2429 (print), 1547-7185 (electronic)

strategies and earnings streams continue to be largely ignored in current discussions of the financial crisis (e.g., Coval, Jurek, and Stafford 2009; Franke and Krahnen 2008). Not surprisingly, metrics that allow for easily detecting shifts in earning streams are scarce.

This article outlines the problems associated with this shift in earnings and proposes customer equity reporting (CER) along with a new ratio, the customer equity sustainability ratio (CESR), as means to increase the level of transparency in financial statements. We emphasize the importance of reporting forward-looking marketing metrics in financial statements, thereby extending the role of marketing. It should supply firm stakeholders with substantial information about the long-term value of the current customer base (see also Joshi and Hanssens 2010; Tuli, Bharadwaj, and Kohli 2010). In line with Wiesel, Skiera, and Villanueva's (2008) recent proposal, which postulates that CER can complement financial statements, we argue that greater transparency, achieved by reporting more forward-looking marketing metrics, might have reduced the devastating consequences of the current financial crisis for banks and might lead to a suitable use of securitization in industries outside banking.

We begin by describing securitization, its advantages, and its disadvantages. Next, we show how CER and CESR can capture some of the effects of securitization previously neglected by first focusing on banking business and its extensive use of securitization. Then, we empirically analyze the transparency of long-term value creation in the financial statements of 38 banks in ten countries and apply our reporting technique, including CESR, to the former U.S. market leader in mortgage lending and origination, Countrywide Financial Corporation. We also explore industries outside banking and show, for nine securitizations of firms and institutions in diverse industries, how CESR can detect differences in the extent of shifts in earnings across time. We conclude with a discussion of the results.

Securitization

Basic Idea of Securitization

Securitization is best known as the pooling and repackaging of a group of assets (e.g., loans) and the subsequent sale of tranches, which are the new divisions of the group of assets classified by asset quality, of this pool to new investors (Ryan 2008; Santomero and Babbel 1997). For example, banks commonly sell a variety of financial products, from mortgages to student loans to credit cards to leasing claims, which provide the underlying loans for their securitization (Ketkar and Ratha 2008; Santomero and Babbel 1997). They transfer the loan assets for regulatory and accounting purposes into a separate business unit, called a special purpose vehicle (SPV), and group them into tranches (Greenbaum and Thakor 1987). Each tranche receives a rating from a rating agency, from senior (AAA to A rating) to equity (no rating/residuum). Then, these tranches can be priced and sold to new investors (Coval, Jurek, and Stafford 2009; Luo, Tang, and Wang 2009), who receive all earnings from the tranche they own, which means they also confront any risks arising from the underlying loans (see Franke and Krahnen 2008).

Not just banks and other financial institutions but virtually all firms and even state and national governments can and do use securitization. The main prerequisite to sell claims to investors is an underlying asset that currently is generating earnings or will generate them in the future (for further details, see Kendall 1996; Kothari 2006). A wide variety of assets from different industries can be used for securitization, such as future revenues from cellular phone contracts or electricity consumption, ticket sales from future soccer games, airline ticket sales, tax revenue receivables, and royalties of intellectual properties (Brinkworth 2004; Downey 1999; Ketkar and Ratha 2008). Prominent recent securitization transactions include musicians such as David Bowie, who issued the first music royalties future receivables securitization (Burke Sylva 1999), soccer teams such as Leeds United (United Kingdom), Tottenham Hotspurs (United Kingdom), and Schalke 04 (Germany), which have used securitization to fund their entire businesses (Brinkworth 2004), and U.S. football teams such as the Denver Broncos, which financed a new stadium by using securitization "backed by about 4,000 stadium-related contracts, such as luxury box seats, club seats, a portion of concession fees and other cash flows" (Gregory 2002, p. 6). Some banks helped Greece improve its short-term financial situation and hide its debt level by providing cash in return for Greece's government payments in the future, meaning that Greece has traded away its revenue from the rights of airport fees and lotteries (Story, Thomas, and Schwartz 2010).

Numerical Example to Outline the Effects of Securitization

Despite the widespread popularity of securitization, we concentrate on banks because loans provide a clear illustration of its effects. We depict a loan example to show the effects of securitization on the earnings stream (for comparable arguments, see Fabozzi, Davis, and Choudry 2006). In this example, we use a bank that issues one five-year loan volume of $100,000 to customers at the beginning of each year, with an annual interest rate of 5% paid at the end of each year. The customers repay the loan linearly over its lifetime, so the effective loan volume reduces to $80,000 in Year 2, $60,000 in Year 3, and so on. During the lifetime of the loan, the bank receives annual interest income of $5,000 in Year 1, $4,000 in Year 2, $3,000 in Year 3, and so on. We assume an interest rate of 3.5% for the financial debt to refinance the loan issuance, resulting in interest expenses of $3,500 in Year 1, $2,800 in Year 2, $2,100 in Year 3, and so on. We also deduct loan loss provisions, equal to .5% of the loan volume, to account for potential default of these customers. So the bank realizes a margin of 1% (5% – 3.5% – .5%) of the loan volume. Although specific terms of loans, such as prepayments, deductions, servicing, and other costs, might increase the complexity of this illustration in practice, we avoid additional complexity for ease of exposition. We also assume that annual redemptions repay the corresponding financial debt.

Table 1 includes the results for a non-securitizing bank, and Table 2 depicts the outcome for a securitizing bank. To show the time-shifting effects of securitization on the earnings of the bank in the second part of our example, we assume that from Year 8 onward, the bank does not issue any new loans and the existing loans expire. Until Year 7, expiring loans are permanently renewed by new issuances, and for ease of exposition we assume that the bank has reached a steady state, so that its total loan volume remains stable. The earnings of $3,000 in Year 1 comprise $1,000 from loans issued in Year 1, $800 from loans of the prior year (Year 0), $600 from the next to last year (Year –1), $400 from the remaining loans of Year –2, and $200 from those of Year –3. In Year 2, the bank issues new loans generating earnings of $1,000, earnings of loans from Year –2 to Year 1 decline by $200 each, and loans from Year –3 expire.

The bank can either distribute the obtained earnings as dividends to its shareholders (distribution case) or keep and reinvest them (reinvestment case). In the distribution case, the initial equity of $30,000 remains stable over time. Because earnings also are constant, the bank realizes a return on equity (ROE) of 10% each year. In the reinvestment case, we assume an annual return rate of the reinvestment of 10%, equivalent to the discount rate. The bank reinvests its earnings each year for a one-year period, repeated until the end of the loan contract, and does not distribute any earnings, so the earnings from previous years are permanently reinvested. For example, in Year 3, the bank can reinvest the sum ($6,300) of the earnings of the previous year ($3,000), the earnings of this year ($3,000), which are labeled as new reinvestment, as well as the earnings from the reinvestment in Year 2 (10% × $3,000 = $300). Its equity increases from $33,000 ($30,000 + $3,000) to $36,300 because of the new reinvestment ($3,000) and the earnings from reinvestment ($300). Thus, the bank's starting equity of $30,000 grows every year from the retained earnings from loans and reinvestment. The ROE still amounts to 10% because the relative increase in earnings equals the rise in equity.

We also consider a securitizing bank (Table 2) that decides, in Year 3, to transfer the whole loan volume and related earnings to new investors.[2] We assume the bank does so at fair market value, or the PV of earnings at the end of Year 3. Thus, the bank receives the earnings from the loan securitization of $6,397. This amount reflects the PV of new loans issued in Year 3, or $2,660, plus the PV of the remaining loans of Years –1 to 2, equal to $3,737 $([\$800 + \$600 + \$400 + \$200] + [\$600 + \$400 + \$200]/1.1 + [\$400 + \$200]/1.1^2 + \$200/1.1^3)$, that were securitized in Year 3 as well. However, in considering the PV of future years, the securitizing bank realizes only $2,660, equal to the PV of the new loans acquired and securitized each year $(\$1,000 + \$800/1.1 + \$600/1.1^2 + \$400/1.1^3 + \$200/1.1^4)$.

We again distinguish between distributing and reinvesting the bank's earnings. In the distribution case, equity remains constant at $30,000. The securitizing bank reaches an ROE of 10% in Years 1 and 2, which increases to 21.3% in Year 3 because of the shift to short-term profit realization through securitization. However, the increase in ROE in Year 3 comes at the expense of a lower ROE from Year 4 onward; it falls back to a steady-state level of 8.9%.

In Year 3, with earnings of $6,397, the securitizing bank surpasses the earnings of the non-securitizing bank by more than 100%. After Year 3, the securitizing bank earns only $2,660, whereas the non-securitizing bank continues to earn $3,000 per year, with more future earnings already contracted. Comparing ROE leads to a similar result. The non-securitizing bank shows a stable ROE of 10%, so the securitizing bank outperforms it in Year 3 with a ROE of 21.3% but then realizes only 8.9% from Year 4 onward.

In the reinvestment case, equity increases by the earnings realized from loans, securitization, and reinvestment. When securitizing in Year 3, ROE grows to 19.4% because of the shift from long-term value creation to short-term profit realization. However, one year later, ROE falls back to a lower level of 9.2% and rises only slowly to 9.4% in Year 7. Compared with the distribution case, the differences in ROE result from the reinvestment of earnings and the compound interest effects of this reinvestment.

In this example, both the seller (i.e., securitizer) and the buyer of the loans have equal assessments of the underlying (risky) earnings and use the same discount rate, and the seller does not realize a higher return rate than the discount rate through reinvestment. Thus, securitization neither creates nor destroys value but again simply shifts the realization of value over time (Kothari 2006). Differences in value accrue only when the seller and buyer differ in (1) their assessments of the underlying (risky) earnings or (2) their discount rates, because (1) and (2) yield to different PVs, or (3) the seller can use the earnings brought forward for reinvestment to realize a return rate greater than the discount rate. Still, securitizers increase their short-term profits at the expense of long-term value creation.

Treatment of Securitization by Reporting Standards

Reporting standards provide few opportunities to detect the earnings shift from long-term value creation toward short-term profit generation because firms are not required to report quantitative outlooks of their future earnings. The U.S. Financial Accounting Standards Board (FASB) introduced FAS 125 and FAS 140, which obligate firms to publish more detailed information about their securitization transactions and valuation principles (FASB 1996, 2000; Ryan 2008); comparable International Financial Reporting Standards call for less information about securitization in IAS 32 and 39 (McCreevy 2008). Therefore, current regulations require banks and firms, respectively, to publish little information about their securitization activities; they might disclose securitization volume in the amendments of their financial statements, but it is not mandatory. The earnings derived from securitization may be registered as noninterest or interest income, which do not need to be separated from

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[2] We assume a direct origination and distribution of loans to new investors. However, an indirect sale through a bank-owned SPV, which is a separate legal entity, is common as a means to obtain various accounting reliefs, though it has no influence on the results in our example.

TABLE 1
Numerical Example of Loans of a Non-Securitizing Bank

Non-Securitizing Bank	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Noninterest income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net interest income from											
Loans issued in Year –3	$200										
Loans issued in Year –2	$400	$200									
Loans issued in Year –1	$600	$400	$200								
Loans issued in Year 0	$800	$600	$400	$200							
Loans issued in Year 1	$1,000	$800	$600	$400	$200						
Loans issued in Year 2		$1,000	$800	$600	$400	$200					
Loans issued in Year 3			$1,000	$800	$600	$400	$200				
Loans issued in Year 4				$1,000	$800	$600	$400	$200			
Loans issued in Year 5					$1,000	$800	$600	$400	$200		
Loans issued in Year 6						$1,000	$800	$600	$400	$200	
Loans issued in Year 7							$1,000	$800	$600	$400	$200
Net interest income	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$2,000	$1,200	$600	$200
Earnings	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$2,000	$1,200	$600	$200
Distribution Case											
Customer equity (as of 12/31)	$6,397	$6,397	$6,397	$6,397	$6,397	$6,397	$6,397				
Customer equity sustainability ratio (as of 12/31)	531	531	531	531	531	531	531				
Loan volume to customers (at beginning of year)	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000				
Equity	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000				
Return on equity	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%				
Reinvestment Case											
Earnings from reinvestment	$0	$300	$630	$993	$1,392	$1,832	$2,315	$2,846	$3,331	$3,784	$4,222
New reinvestment	–$3,000	–$3,300	–$3,630	–$3,993	–$4,392	–$4,832	–$5,315	–$4,846	–$4,531	–$4,384	$42,222
Total result from reinvestment	–$3,000	–$3,000	–$3,000	–$3,000	–$3,000	–$3,000	–$3,000	–$2,000	–$1,200	–$600	$46,445
Customer equity (as of 12/31)	$6,670	$7,270	$7,930	$8,656	$9,455	$10,333	$11,299				
Customer equity sustainability ratio (as of 12/31)	550	546	542	539	535	532	530				
Loan volume to customers (at beginning of year)	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000				
Equity	$30,000	$33,000	$36,300	$39,930	$43,923	$48,315	$53,147				
Return on equity	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%				

TABLE 2
Numerical Example of Loans of a Securitizing Bank

Securitizing Bank	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Noninterest income	$0	$0	$6,397	$2,660	$2,660	$2,660	$2,660	$0
Net interest income from								
Loans issued in Year –3	$200							
Loans issued in Year –2	$400	$200						
Loans issued in Year –1	$600	$400						
Loans issued in Year 0	$800	$600						
Loans issued in Year 1	$1,000	$800						
Loans issued in Year 2		$1,000						
Loans issued in Year 3								
Loans issued in Year 4								
Loans issued in Year 5								
Loans issued in Year 6								
Loans issued in Year 7								
Net interest income	$3,000	$3,000	$0	$0	$0	$0	$0	$0
Earnings	$3,000	$3,000	$6,397	$2,660	$2,660	$2,660	$2,660	$0
Distribution Case								
Customer equity (as of 12/31)	$6,397	$6,397	$6,397	$2,660	$2,660	$2,660	$2,660	
Customer equity sustainability ratio (as of 12/31)	531	531	000	000	000	000	000	
Loan volume to customers (at beginning of year)	$300,000	$300,000	$0	$0	$0	$0	$0	
Equity	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	
Return on equity	10 0%	10 0%	21 3%	8 9%	8 9%	8 9%	8 9%	
Reinvestment Case								
Earnings from reinvestment	$0	$300	$630	$1,333	$1,732	$2,171	$2,654	$3,186
New reinvestment	–$3,000	–$3,300	–$7,027	–$3,993	–$4,392	–$4,832	–$5,315	–$3,186
Total result from reinvestment	–$3,000	–$3,000	–$6,397	–$2,660	–$2,660	–$2,660	–$2,660	$0
Customer equity (as of 12/31)	$6,670	$7,270	$8,239	$5,568	$6,366	$7,245	$8,211	
Customer equity sustainability ratio (as of 12/31)	550	546	147	283	310	333	353	
Loan volume to customers (at beginning of year)	$300,000	$300,000	$0	$0	$0	$0	$0	
Equity	$30,000	$33,000	$36,300	$43,327	$47,320	$51,713	$56,544	
Return on equity	10 0%	10 0%	19 4%	9 2%	9 3%	9 3%	9 4%	

other noninterest or interest income positions. Therefore, the shift from creating long-term value to realizing short-term profits can be hidden well (Dechow and Shakespeare 2009).

Advantages and Disadvantages of Securitization

Securitization offers several major advantages to firms (for an extended discussion, see Franke and Krahnen 2008). First, securitization helps banks manage the various risks of underlying loan portfolios. They can construct well-diversified investments and lower or even avoid risks by transferring them to other investors. In risk transfers, banks might also be able to realize profits if the sellers and buyers of loans maintain different evaluations of the fair value. Second, firms can attain stronger capital, funding, and liquidity positions through securitization because it enables them to turn illiquid assets, such as mortgages, into more liquid assets. Third, securitization supports banks in their efforts to fulfill regulatory requirements such as Basel II, because they no longer need to hold equity for securitized loans (Calem and LaCour-Little 2004). Fourth, the lower equity requirements for securitized loans increase ROE.

However, securitization also produces two major disadvantages. First, the frequent repackaging and splitting of ABSs into tranches make it difficult to determine the appropriate value of those securities. This topic appears in extensive discussions elsewhere, so we do not detail it here (see Coval, Jurek, and Stafford 2009; Luo, Tang, and Wang 2009). Second, the short- and long-term effects of securitization are not equally transparent. The result of the short-term effect, usually an increase in earnings, is clearly described in financial reports, but the corresponding decrease in long-term value is less obvious and, as we show in our empirical study, is not well reported by the vast majority of firms. The low transparency causes various problems, including those related to management compensation when variable payments are linked to short-term profits (Dechow, Myers, and Shakespeare 2010; Dechow and Shakespeare 2009).

Customer Equity Reporting and Securitization

Customer Equity Reporting

Customer equity reporting creates the required transparency by reporting the value of the customer base (i.e., customer equity) and its development over time. Blattberg and Deighton (1996) define "customer equity" (CE) as the customer lifetime values (CLV) of the firm's current customers j:

$$(1)\qquad \text{CE} = \sum_{j=1}^{J} \text{CLV}_j.$$

If the total lifespan of a customer j is T_j, CLV is simply the PV of customer j's earnings ($\text{Earn}_{j,t}$) over time t (discounted at rate i):

$$(2)\qquad \text{CLV}_j = \sum_{t=0}^{T_j} \frac{\text{Earn}_{j,t}}{(1+i)^t}.$$

Blattberg and Deighton (1996), Gupta, Lehmann, and Stuart (2004), Rust, Lemon, and Zeithaml (2004), and Rust, Zeithaml, and Lemon (2000) lay a foundation for a deeper understanding and wider acceptance of the CE approach in science and practice (see also Srinivasan and Hanssens 2009). As Wiesel, Skiera, and Villanueva (2008) indicate, CER extends this field of application by connecting CE to financial reporting. We outline an opportunity to define CE more narrowly than Wiesel, Skiera, and Villanueva do for firms in industries with high shares of contracted business, such as banking, telecommunications, and electricity. In this contractual setting, in general, customer relationships span several years, and future earnings can be projected reliably because they are contractually assured. We consider only contracted future earnings for our calculation of CLV and CE (unless noted otherwise).

Customer Equity Sustainability Ratio

We propose the CESR as a new ratio to quantify the intensity of long-term value creation and establish a connection between a firm's financial statements and forward-looking CER. The CESR contrasts the future value of an existing customer base with current earnings, such that for an individual customer j, the future value is the PV of all earnings after the current year t = 0. Defining CESR_j as the ratio of the PV of all future earnings to the corresponding CLV and rearranging leads to the following:

$$(3)\qquad \text{CESR}_j = \frac{\sum_{t=1}^{T_j} \frac{\text{Earn}_{j,t}}{(1+i)^t}}{\sum_{t=0}^{T_j} \frac{\text{Earn}_{j,t}}{(1+i)^t}} = \frac{\text{CLV}_j - \text{Earn}_{j,0}}{\text{CLV}_j} = 1 - \frac{\text{Earn}_{j,0}}{\text{CLV}_j}.$$

Therefore, the CESR for all current customers is

$$(4)\qquad \text{CESR} = \frac{\sum_{j=1}^{J}\sum_{t=1}^{T_j} \frac{\text{Earn}_{j,t}}{(1+i)^t}}{\sum_{j=1}^{J}\sum_{t=0}^{T_j} \frac{\text{Earn}_{j,t}}{(1+i)^t}} = \frac{\sum_{j=1}^{J}\text{CLV}_j - \sum_{j=1}^{J}\text{Earn}_{j,0}}{\sum_{j=1}^{J}\text{CLV}_j} = 1 - \frac{\sum_{j=1}^{J}\text{Earn}_{j,0}}{\sum_{j=1}^{J}\text{CLV}_j}.$$

If we define current earnings as $\text{Earn}_0 = \Sigma_{j=1}^{J}\text{Earn}_{j,0}$, we can rewrite Equation 4 as follows:

$$(5)\qquad \text{CESR} = 1 - \frac{\text{Earn}_0}{\text{CE}}.$$

In the case of nonnegative earnings and positive CE, the CESR falls between 0 and 1. A higher CESR indicates that the future value of the current customer base is high. A CESR of 0 implies that all earnings occur in the current year, as in our securitization example, whereas a CESR of 1 presumes that all earnings will be realized in the future, with no current earnings.

Numerical CER and CESR Example

To explain the relevance of CER and CESR in more detail, we adapt the concept to our numerical example in Tables 1 and 2. The non-securitizing bank keeps issuing loans at an annual volume of $100,000 and realizes earnings of $3,000 from the loans each year. In the distribution case, annual CE is $6,397, or the PV of all current ($3,000) and future, already contracted earnings ($\$3,397 = \$2,000/1.1 + \$1,200/1.1^2 + \$600/1.1^3 + \$200/1.1^4$). The CESR is .531 (1 – $3,000/$6,397). The bank receives 47% ($3,000/$6,397) of its contracted earnings in the current year and 53% ($3,397/$6,397) in the future. In the securitization case, the bank realizes all future earnings (from Year 3 onward) immediately, so CE from Year 4 onward decreases to $2,660. Thus, the CESR drops from .531 to 0 (1 – $2,660/$2,660).

In the reinvestment case, the CE of the non-securitizing bank is $6,670 in Year 1, which comprises the PV of all current and future loan-related earnings of $6,397 and the PV of the current earnings in Year 1 reinvested for one year at a 10% return rate ($273 = [$3,000 × .1]/1.1). The reinvestment gains raise CESR to .550 compared with the distribution case. In Year 7, a CESR of .530 derives from the current earnings from loans ($3,000) and reinvestment ($2,315) and from the PV of future earnings from loans ($3,397) and reinvestment ($2,587), or .530 = 1 – ($3,000 + $2,315)/($3,000 + $2,315 + $3,397 + $2,587).

Again, the values of the securitizing bank differ from those of the non-securitizing bank. When securitizing in Year 3, CESR drops to .147 because all future earnings from securitization ($6,397) are realized immediately along with the reinvestment gains ($630). Only the reinvestment generates future earnings ($1,212 = $1,333/1.1). Until Year 7, CESR increases to .353 because gains from reinvestment rise but earnings from securitization remain constant. Note that CESR also reflects the investment horizon of the reinvestments, which is one year in our example. If this investment horizon was five years, it would correspond to the investment period of the (five-year) loans; therefore, the time horizon of both investments would be the same.

The major advantage of CESR is that it creates more transparency and highlights, in a single metric, whether firms increase their current earnings at the expense of their long-term value. Comparing the distribution with the reinvestment case for the non-securitizing and securitizing bank reveals an additional strength of CESR. If the bank chooses to keep and reinvest its earnings from loans and securitization, the bank concurrently fosters its future earnings position, and CESR increases.

Empirical Studies

Aim

First, we focus in our empirical studies on banking because of its extensive use of securitization. We determine whether banks provide sufficient information about the use of securitization to make their economic impact transparent. Then, we apply our reporting technique to the former market leader in mortgage lending and origination in the United States, Countrywide Financial Corporation, which made heavy use of securitization, and we show that CER and CESR could have provided much more transparency. Next, for nine securitizations of firms and institutions in diverse industries, we show that CESR can detect differences in the extent of the shift in earnings across time.

Analysis of Securitization Transparency in Financial Statements

We analyze 38 banks in the most important banking markets in the United States and Europe to determine how much information they provide about securitization in their financial statements (i.e., annual and quarterly reports). The sample includes two market leaders (measured by market capitalization) from ten countries and some randomly selected smaller banks and public institutions. These banks offer wide service portfolios to customers to originate sufficient loan volumes for securitization. As we show in Table 3, nearly all banks are involved in securitization, but especially in the United States, few report the earnings that they realize separately. Instead, most banks follow the opportunity provided by current reporting standards and sum their "real interest earnings" plus "securitization earnings" as total interest income. This summary makes it difficult, if not impossible, to evaluate the extent of the shift toward short-term profit realization inherent in securitization. In turn, it remains unclear what share of profit relates to the ongoing banking business and which part derives from the one-time effects of securitization.

Description of Countrywide Financial Corporation

Of this data set, we choose Countrywide for our detailed analysis because it fulfills our information requirements about securitization and other interest-bearing assets. In addition, Countrywide was the U.S. market leader in mortgage lending and origination between 2004 and 2007 (Countrywide Financial Corp. 2008). Because of its heavy engagement in subprime mortgage–backed security transactions and the debt market turbulence of the financial crisis, Countrywide needed a rescue from Bank of America in February 2008 (Countrywide Financial Corp. 2008) and no longer publishes its own financial statements.

Analysis of Countrywide Financial Corporation

To apply CER and CESR to Countrywide, we make a few assumptions and calculations to project future earnings. The contracted loans generate net interest income and net loan servicing fees. We assume that loans are amortized linearly and that contracted earnings are realized over the loans' lifetimes. We also assume no further earnings from insurance premiums and other business after 2007 and adopt the distribution and reinvestment policy of Countrywide.

In Table 4, we provide the resulting CE and CESR for 1998–2007 for the actual business of Countrywide, which includes securitization (labeled "Securitization Case"). The increase in CE from $2.567 billion in 1998 to $20.151 billion in 2006 may be affiliated with higher loan volumes origi-

TABLE 3
Information About Securitization from 38 Banks

Bank	Country	General Information	Securitization Volume	Securitization Earnings	Interest Income from Other Interest-Bearing Assets
Largest National Banks					
Erste Bank	Austria	√	√		
Raiffeisen International Bank	Austria	√	√		
BNP Paribas	France	√	√		
Société Générale	France	√	√		
Deutsche Bank	Germany	√	√		
Commerzbank	Germany	√	√		
Allied Irish Bank	Ireland	√	√		
Bank of Ireland	Ireland	√	√		
Unicredit	Italy	√			
Intesa San Paolo	Italy	√	√		
ING Group	Netherlands	√	√		
Fortis	Netherlands	√			
Santander	Spain	√	√		
BBVA	Spain	√	√		
Credit Suisse	Switzerland	√	√	√	√*
UBS	Switzerland	√			
HSBC	United Kingdom	√	√		
Standard Chartered	United Kingdom	√	√		
JPMorgan Chase & Co.	United States	√	√	√	√*
Wells Fargo	United States	√	√	√	√*
Random Selection Banks					
Bank Austria	Austria	√			
Comdirect	Germany	N A			
DAB Bank	Germany	N A			
Deutsche Postbank	Germany	√	√		
Hamburger Sparkasse	Germany	N A			
KfW	Germany	√	√		
Landesbank Hessen-Thuringen	Germany	√	√		
ABN Amro	Netherlands	√	√		
Rabobank	Netherlands	√			
Zurcher Kantonalbank	Switzerland	N A			
Barclays	United Kingdom	√	√		
HBOS	United Kingdom	√	√		
Lloyds TSB	United Kingdom	√	√		
Northern Rock	United Kingdom	√	√	(√)	
RBS	United Kingdom	√	√		
Bank of America	United States	√	√	√	√*
Countrywide	United States	√	√	√	√*
Wachovia	United States	√	√		

Notes √ = Information is clearly available, √* = Information can be derived directly from the data, (√) = Information can be assumed from data, and N A = not available

nated and sold, longer mortgage lifetimes within the servicing portfolio, or higher interest margins from the remaining business Regardless of the cause, Countrywide created additional value for the future in 2006 The subsequent intense drop in earnings appeared in the 2007 CE of $9 647 billion, when the decreasing U S mortgage business reduced both total earnings and CE by approximately 50% in response to lower income levels and higher loan loss provisions

In contrast to the immense fluctuations in CE from 1998 to 2007, CESR remained relatively stable, with values of 291 in 1998 and 372 in 2007 In other words, the earnings structure was not affected by the economic downturn, even when the business model suffered serious harm Countrywide, with a CESR of 372 in 2007, still realized 62 8% of the earnings that it originated in the same year but only 37 2% in subsequent years Because the average mortgage lifetime is 6 8 years, we believe it is fair to assert that Countrywide aimed to realize short-term profits

Because we want to demonstrate that CER and CESR could have depicted the realization of short-term profits at the expense of long-term value creation at Countrywide, we ran a counterfactual analysis (labeled "Non-securitization Case" in Table 4) in which we examined what would have happened had Countrywide not securitized at all In this analysis, CE and CESR would have increased strongly The most extreme difference would have occurred in 2002, when 79 0% of Countrywide's CE was immediately realized, but that value would have been just 32 7% in the securitization case (For further details on these calculations, see Web Appendix A at http //www marketingpower com/jmmay11)

TABLE 4
Countrywide Earnings Structure

A: Countrywide: Securitization Case (Actual Business)	1998	1999	2000	2001	2002	2003	200
Originate and Distribute Business							
Earnings on sale of mortgage loans and securities	699,433	557,743	611,092	1,498,812	3,377,065	5,541,539	4,386,
Earnings on sale of other loans and securities	623,531	406,458	398,544	103,178	94,153	345,897	455,
Total earnings, originate and distribute business	*1,322,964*	*964,201*	*1,009,636*	*1,601,990*	*3,471,218*	*5,887,436*	*4,842,*
Buy and Hold Business							
Net interest income	66,764	93,933	10,678	331,877	792,230	1,359,390	1,965,
Net loan servicing fees	241,817	551,723	584,024	–2,146	–865,752	–463,050	465,
Net insurance premiums earned	12,504	75,786	274,039	316,432	561,681	732,816	782,
Other	175,363	202,742	195,462	248,506	358,855	462,050	510,
Total earnings, buy and hold business	*496,448*	*924,184*	*1,064,203*	*894,669*	*847,014*	*2,091,206*	*3,724,*
Total earnings	*1,819,412*	*1,888,385*	*2,073,839*	*2,496,659*	*4,318,232*	*7,978,642*	*8,566,*
Customer equity	2,567,495	3,604,128	3,753,248	4,174,750	5,468,867	12,087,915	13,868,
Customer equity sustainability ratio	291	476	447	402	210	340	3
Securitization ratio	58 9%	65 3%	72 1%	95 5%	95 9%	86 1%	89 4
Return on equity	15 3%	15 2%	11 6%	12 7%	18 2%	35 8%	23 9
Nonprime loans as a percentage of total loan production	3 18%	2 69%	6 23%	4 50%	3 74%	4 56%	10 8
Delinquent mortgage loans as a percentage of total loan production	3 91%	3 55%	11 30%	14 42%	14 41%	12 46%	11 2

B. Countrywide: Non-Securitization Case (Counterfactual Analysis)	1998	1999	2000	2001	2002	2003	200
Total earnings	*1,307,973*	*1,645,620*	*1,900,767*	*1,422,166*	*2,459,488*	*5,539,118*	*8,453,*
Customer equity	2,567,495	4,166,711	4,639,131	5,339,600	7,517,683	16,039,134	20,618,
Customer equity sustainability ratio	491	605	590	734	673	655	5

Notes Amounts listed are in thousands of U S dollars

Application of the CESR to Industries Outside Banking

Although securitization is most commonly used in banking, it enjoys great popularity in many other industries as well Few of these firms provide sufficient information to illustrate the shift from long-term value creation to short-term profit realization either In Table 5, we provide an overview of nine securitizations from a wide range of industries, including three state governments and several nonprofit organizations, which provide enough information to calculate the effect of securitization on changes in CESR (For more details on the calculations of securitization cases in industries outside banking, see Web Appendix B at http // www marketingpower com/jmmay11)

According to Table 5, the transaction volume ranged from several million to billions of U S dollars, and securitization appears in diverse settings The most remarkable result is that the effects of securitization on changes in CESR differ across the nine securitizations and hardly correlate with transaction volume For example, the largest securitization of $1 8 billion, for EDF Group, diminished

TABLE 5
Securitization in Industries Outside Banking

Reference	Firm or Institution	Transaction Type	CESR Without Securitization	CESR with Securitization
Burke Sylva (1999)	David Bowie	In January 1997, David Bowie raised $55 million from the issue of ten-year asset-backed bonds, with collateral consisting of future royalties from 25 albums that he recorded before 1990	(1997) 911	(1997) 230
Campbell and Hashimoto (2003)	Korean Air Lines	Korean Air Lines securitized 2003 future receivables from the sale of its tickets on routes between Japan and Korea worth ¥27 billion ($242 million) for a period of 36 months	(2003) 833	(2003) 825
EDF Group (2003)	EDF (Electricité de France)	In 1999, EDF transferred receivables of €1 1 billion (US$1 2 billion in 1999) of employees' housing loans to the Electra mutual securitization fund Since the end of 2000, EDF has transferred future trade receivables of energy supply contracts to a mutual securitization fund, reaching an amount of €2 1 billion ($1 8 billion in 2001) by 2001	(1999) 908 (2001) 882	(1999) 905 (2001) 876
Everton Football Club (2002)	Everton FC (United Kingdom)	In 2002, Everton FC (UK soccer club) signed a securitization agreement serviced by future season ticket sales and match-day ticket sales The £30 million ($45 million) loan must be repaid with the interest charge over a period of 25 years	(2002) 989	(2002) 958
FIFA (2006)	FIFA	FIFA, world soccer's governing body, raised $420 million through a bond deal in 2001, using expected receipts of $536 million from the 2002 World Cup in Japan and South Korea and the 2006 World Cup in Germany as collateral	(2001) 943	(2001) 876
Armstrong (2009)	Keele University (United Kingdom)	Keele University (UK) securitized future student housing income worth £55 4 million (US$83 8 million) to finance refurbishments of the student residences and repay existing debt	(2000) 938	(2000) 891
Kasprak (2002)	State of Alaska	Beginning in July 2001, Alaska used 40% of the tobacco settlement revenue to get an infusion of cash to build, rehabilitate, and remodel schools The 2001 legislature passed in addition a law to securitize an additional 40% of the settlement revenue so that the transactions together securitized 80% of the tobacco settlement revenue	(2001) 906	(2001) 181
Kasprak (2002)	State of South Carolina	South Carolina passed legislation to securitize its MSA settlement dollars through 2018 The state established four funds to develop its water and wastewater infrastructure, compensate individuals for losses in tobacco production (25%), and fund a variety of health care programs and services (75%)	(2001) 906	(2001) 104
Kasprak (2002)	State of Wisconsin	Wisconsin sold $1 54 billion of bonds backed by state appropriations to refinance debt issued by Badger Tobacco Asset Securitization Corp	(2001) 915	(2001) 0

CESR only from 882 to 876, and one of the smallest securitizations of $242 million, for Korean Air Lines, led to a comparable drop in the size of CESR In contrast, the securitizations of David Bowie and the State of Wisconsin both prompted drops of CESR from approximately 900 to less than 250

In summary, although securitization is widespread in banking and prominent in the context of the financial crisis, it also is used commonly outside banking business The diversity of firms and institutions indicate that securitization is applicable in many settings Although we acknowledge that the lack of transparency requires strong assumptions about the missing information in some of the securitization cases in Table 5, CESR describes well how strongly the earnings shifted over time

Discussion and Conclusion

Discussion of Customer Equity Sustainability Ratio

Our empirical results illustrate that many banks and firms fail to provide sufficient transparency about their securitization activities, which makes it difficult, if not impossible, to evaluate which earnings come from ongoing business and which result from the one-time effects of securitization Unfortunately, current reporting standards provide limited means to detect such behavior because firms are not required to report future earnings Our empirical studies show that CER and the newly developed CESR provide more transparency and emphasize that firms that make extensive use of securitizations should increase their short-term profits at the expense of the long-term value of their customer base As forward-looking marketing metrics, CER and CESR add another perspective to backward-oriented accounting and reporting practices, which provide mainly historic information We argue that marketing researchers have accumulated enough knowledge in the past decade to determine future values (e g , by calculating CLV, CE) Ignorance of future earnings is no longer justified, and marketing academics should lead the field in the drive to consider future earnings in financial reporting Such reporting techniques may also hasten marketing's reentry into the boardroom

Comparison of Customer Equity Sustainability Ratio with Other Performance Ratios

As a new key ratio, CESR requires comparisons with well-established performance ratios, such as ROE and return on risk-adjusted capital, efficiency ratios, such as the cost income ratio, and productivity ratios, including economic value added [3] These ratios all use historic data and consider only the current level of a firm's profit or earnings, which means they neglect a possible shift from future (i e , long-term) value creation to short-term profit realization With securitization, the ratios exhibit better values in the respective year than they would otherwise because short-term profits decrease cost–income ratio and increase ROE, return on risk-adjusted capital, and economic value added In contrast, securitization lowers CESR immediately and provides stakeholders with a reliable indicator that the firm has moved from long-term value creation to short-term profit realization

Another contribution of CESR becomes obvious when we compare it over time with the development of earnings, CE, ROE, and the securitization ratio (i e , proportion of the securitized loan volume to total loan volume in a particular year) of Countrywide Except for 2007, earnings and CE increased constantly, suggesting a successful business and value-creation process In this empirical case, ROE would increase only after the securitization intensity had risen and then would return to its former levels Furthermore, ROE could increase in response to other determinants, such as higher issued loan volumes, greater efficiency, and better equity structures Therefore, a high ROE value can, but does not necessarily, substantiate heavy securitization engagement or short-term profit realizations

To determine the relationship between the securitization ratio and CESR, we use the results from our empirical study of Countrywide, which reveal an insignificant correlation of – 241 (p = 503, n = 10) This outcome indicates the securitization ratio cannot substitute for CESR Although the changes in the securitization ratio point to a modification in the securitization strategy of Countrywide, it cannot indicate how much contracted business still gets realized in upcoming years, because this ratio usually measures the share of loans securitized in one particular year Moreover, securitization ratios do not distinguish the case in which a firm distributes the earnings from securitization to its shareholders from one in which it reinvests these earnings and thus retains them in the firm

As an early warning system, CESR translates information into an earnings-related metric and includes earnings from nonsecuritization businesses At the moment of securitization, CESR instantly declines, alerting stakeholders to the firm's short-term profit realization Furthermore, CESR enables stakeholders to recognize the firm's distribution or reinvestment strategy, as we show in our example Information about developments in the firm's shift from long-term value creation to short-term profit realization and the comparisons with the values of other firms thus provide strong advantages In particular, this ratio condenses important information without losing content and without limits on its applicability to a wide range of businesses Legal and regulatory restrictions and the effort to keep competitive advantages have hindered firms from publishing a large pool of data on its future orientation, supporting the application of CER and CESR

Relationship Between Customer Equity and Customer Equity Sustainability Ratio

To deliver the necessary level of transparency, firms should report both CE and CESR and grant stakeholders insights into the value of their current customer base and the extent of their long-term value creation As we highlight in Figure 1, a high CE value indicates a strong customer base, which is always better than a weaker one In contrast, CESR indicates whether the firm pursues long-term value creation or short-term profit realization We recognize explicitly that CESR has no per se optimal value and leaves normative conclusions up to stakeholders For example, if the firm is able to attract investors that are willing to pay a price above the fair value of the underlying loans, the sale is beneficial for the firm and its stakeholders even though securitization reduces CESR The reverse holds if buyers are only willing to pay a price that is lower than the value for the seller Still, if a firm with low values of CE and CESR reports high earnings for the current year, stakeholders should recognize its weak customer base and drop in future earnings if the firm cannot acquire enough valuable new customers or generate more business with its current customers

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[3] Return on risk-adjusted capital = net income/allocated risk capital, this can be used to compare projects or investments under consideration on the basis of their implied risk profile Cost income ratio = operating expenses/operating income—that is, the expenses needed to realize an income of $1 Economic value added = net operating profit – (capital × cost of capital), economic value added was developed to measure the real surplus a company generates in a specific period from an appropriate return on the capital invested

Even if sellers and buyers agree on the fair value of securities, extreme values of CESR could describe the best case for a firm under special circumstances For example, a CESR of 0 can be the most desirable for a firm with liquidity needs that securitizes its entire future earnings to bridge the liquidity gap and likely prevent insolvency For a project firm to develop and operate an office building with some lease contracts already signed at construction start, in the first years of development, CESR will be 1 because no earnings occur until the building is fully operational

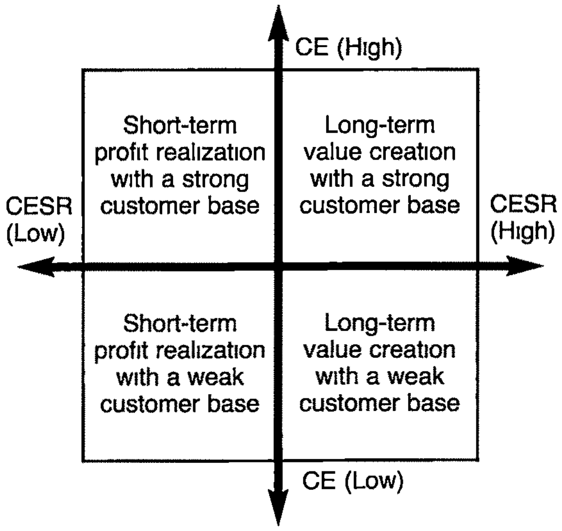
Thus, there are no general critical values of CESR per se because CESR is business specific However, stakeholders should be alerted if their firm's CESR is fundamentally lower than the CESR in the firm's peer group and be aware that their firm is focusing on short-term profit realization In addition, if the firm's CESR continuously declines over time, stakeholders should seriously consider a firm's intended shift from long-term value creation to short-term profit realization Moreover, it is necessary to exercise caution if huge increases in compensation or large dividends go along with strong declines in CESR

Limitations and Further Research

Our study is subject to some limitations that should prompt further research First, the banking industry is complex, though we focus on simple standard loans in our example Therefore, further research should identify the implied earnings structure of more complex products and business transactions so that CER and CESR can be implemented in diverse industries

Second, the aim of this article is to present CESR as a new metric and outline its benefits in several empirical studies Further research should observe how regulatory authorities, particularly in the financial industry, can best establish obligations to publish CER and CESR Securitizations can have a dramatic impact on variable payments in management compensation if these are linked to short-term profits Further research could more strongly analyze how CER and CESR can help develop more appropriate compensation plans and better disseminate information about managers' long-term value creation efforts

FIGURE 1
Relationship Between Customer Equity (CE) and Customer Equity Sustainability Ratio (CESR)


CE (High)
Short-term profit realization with a strong customer base
Long-term value creation with a strong customer base
CESR (Low)
CESR (High)
Short-term profit realization with a weak customer base
Long-term value creation with a weak customer base
CE (Low)

Third, the quality of CER and CESR crucially depends on good forecasts, particularly in industries with high shares of noncontractual business Marketing researchers have developed powerful methods to accommodate the greater amount of uncertainty in such situations (e g , Reinartz and Kumar 2000), but the influence of such methods on current reporting standards is still limited Determining the value of at least half of the nine securitizations displayed in Table 5 requires profound knowledge of the firm's ability to further market the underlying products, however, currently, marketing scholars seem to play only a minor role in determining the value of these securitizations Thus, future studies could outline in more detail how current marketing knowledge could be used to increase the quality of forecasts and determine the value of these securitizations more accurately

Fourth, current reporting standards already apply forward-looking information and develop accounting forecasts based on future earnings, such as the fair values of goodwill and financial assets External auditors assess uncertainty and reliability, limiting the space for managerial arbitrariness and opening the floor to our reporting technique Therefore, further research should examine if CER and CESR require more detailed rules to reduce the risk of managerial arbitrariness

Fifth, securitization is likely to affect marketers and their customers, as we illustrate for a bank, though the effects hold equally for other firms The lack of future earnings from the securitized loans of current customers obliges a bank to intensify its customer acquisition efforts and sell more loans to ensure that future earnings do not decrease, in particular if it distributes earnings to its shareholders However, too much pressure on customer acquisition is likely to also increase the chances of acquiring unprofitable and high-risk customers (Cao and Gruca 2005, Reinartz, Thomas, and Kumar 2005), a factor that finance research also recognizes “As balance sheets expand, new borrowers must be found When all prime borrowers have a mortgage but balance sheets still need to expand, then banks have to lower their lending standards in order to lend to subprime borrowers The seeds of the subsequent downturn in the credit cycle are thus sown” (Shin 2009, p 310) Further research could provide stronger support for this speculative, albeit likely, statement

In summary, the lack of transparency in current financial reporting about the long-term effects of securitization is unacceptable Customer equity reporting and the CESR provide more transparency to stakeholders and demonstrate the financial stability of banks and firms Perhaps CER and CESR could have helped avoid some of the challenges of the current financial crisis, more important, perhaps they can provide insights into how investors and firms can be supported in their attempts to prevent the next one In any case, marketing should not leave the field to finance and accounting, instead, it should emphatically assert its claim and provide stakeholders with substantial information about the long-term value of the customer base

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Jan R. Landwehr, Ann L. McGill, & Andreas Herrmann

It's Got the Look: The Effect of Friendly and Aggressive "Facial" Expressions on Product Liking and Sales

When designing their products, companies try to employ shapes that are both emotionally appealing and compatible with the brand's image One way to accomplish these aims is to anthropomorphize a product's appearance The current research investigates how people decode emotional "facial" expressions from product shapes and how this affects liking of the design, using three studies in the domain of cars and one in the domain of cellular phones In accordance with theories on the perception of human faces, the first study shows that perception of friendliness is limited to the grille (mouth), while aggressiveness can be communicated with both grille and headlights (eyes) The next study examines the best-liked combination of these two emotional expressions and finds that consumers prefer the combination of an upturned (friendly) grille with slanted (aggressive) headlights The authors further explain this finding on a process level by showing that this combination triggers a positive affective state of both high pleasure and arousal The third study validates the results with automobile sales data, and a fourth study extends the findings to another product category

Keywords product design, anthropomorphism, emotional facial expression, car sales

People commonly see faces on inanimate objects, including products For example, knobs, buttons, windows, and lights in the right configuration might be perceived as eyes Handles, trim, slots, grilles, and clasps might convey mouths The ease with which people see faces in their environment is illustrated in Audi's recent advertisement (http //www youtube com/watch?v=91-HAFm7TPo) and American Express's ad campaign (http //www youtube com/watch?v=m56F4EKN9hg), both of which show "faces" on a variety of objects such as handbags, locks, furniture, buildings, and cars (see also www facesinplaces blogspot com) A readiness to see faces in objects is perhaps not surprising given psychological research showing that the human face poses an evolutionary, highly relevant stimulus configuration that is processed more quickly and with more attention than most other stimuli in the environment (Mondloch et al 1999) Indeed, Windhager et al 's (2008) recent study of car designs confirms the widespread tendency for people to see faces on products

Furthermore, recent research has suggested that the tendency to anthropomorphize products in this way goes beyond simply picking up the resemblance to a face That is, people do not align specific design features with facial features simply to appreciate the analogy but instead seem to actually perceive concrete facial expressions For example, Aggarwal and McGill (2007) find that people interpret an upturned grille on a car not simply as a mouth but more specifically as a smile Participants in Windhager et al 's (2008) study reported seeing emotional expressions such as aggression and anger in cars Furthermore, other research has found that design elements corresponding to facial features affect product liking (Aggarwal and McGill 2007, Windhager et al 2008)

Product designers' ability to suggest a human face and, more specifically, one that conveys a particular emotional expression should provide a powerful tool for marketers In addition to the direct effect on liking, the facial features of the product might be used to communicate an emotionality corresponding to the brand personality (Aaker 1997, Fournier 1998) Marketers seem to recognize that the face of the product can be an important brand element For example, when Porsche expanded its product line to the Cayenne sport utility vehicle and Panamera sedan, designers were charged with giving the new models the typical Porsche face, familiar to consumers through the well-known 911 and Boxster models These instructions are

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ISSN 0022-2429 (print), 1547-7185 (electronic)

based on sound reasoning. 70% of drivers identify and judge vehicles by the headlights and grille (Welsh 2006).

However, when designers are asked to start from scratch to convey specific emotional expressions in a product's face, they find little research to guide them. Although the current marketing literature acknowledges the importance of product design for a product's success (Bloch 1995; Chitturi, Raghunathan, and Mahajan 2008) and offers rich insights into the effects of elicited emotions on consumer behavior (Bagozzi, Gopinath, and Nyer 1999), the perceptual and evaluative processes of particular emotional shapes and expressions have received only limited attention. In particular, beyond the general finding that people see human facial expressions on product "faces," no research has been conducted to date showing how particular design elements come together to convey specific emotional expressions. Furthermore, although studies have suggested an effect on liking of facial features, the research is limited and contradictory (Aggarwal and McGill 2007; Windhager et al. 2008). Thus, despite the strong tendency to see faces on products and the potentially powerful effect of this tendency on brand perception and liking, the marketing and consumer behavior literatures offer nearly nothing on the effects and underlying process of this form of product anthropomorphism, an astonishing omission.

The current research is intended to fill these gaps and contribute to the marketing literature in three major respects. First, using extant research on the decoding of emotional expressions in human faces, we show which of a product's design features can be used to express friendliness and aggressiveness. These results contribute to the developing literature on anthropomorphism, and they form a basis from which we can derive practical implications for designers hoping to convey emotional expressions corresponding to particular brand personalities. Second, we integrate the conflicting results reported in prior research of a preference for friendly (Aggarwal and McGill 2007) versus aggressive (Windhager et al. 2008) expressions in car fronts by considering the phenomenon from the perspective of the pleasure–arousal theory of emotions (Russell 1980, 1989). This approach enables us to derive and test more fine-tuned hypotheses about the underlying processes responsible for consumers' liking of emotionalized product faces. Third, we address questions of generalizability and external validity by conducting our laboratory studies on two product categories—cars and cellular phones—and by examining real sales data for cars, respectively.

We organize the remainder of the article as follows. In the theoretical section, we review literature streams on perception of emotional expressions in human faces, emotional facial expressions' role in eliciting pleasure and arousal, and the relationship of pleasure, arousal, and preference judgments. In the empirical section, we report the results of four studies, and in each one we focus exclusively on the effect of design elements that may be perceived as corresponding to eyes and a mouth. The first study establishes that people perceive latent predispositions such as friendliness and aggressiveness in products when these design elements are shaped to mimic human emotional facial expressions such as happiness and anger. Furthermore, perception of these predispositions seems to follow the same rules that have been observed for the processing of human facial expressions. The second study examines how shape manipulations influence consumers' liking and explores the underlying process in a causal model that includes participants' perceptual responses and the corresponding emotional reactions as mediators. The third study examines the effects of feature shape on car sales in the German market, and the fourth study extends the findings to cell phones. In the concluding discussion, we provide theoretical and managerial implications and offer recommendations for further research.

Theoretical Background and Hypotheses

To allow for a practical application of our findings, we began with objectively defined feature shapes in a product's design and, from there, set out to understand consumers' liking of car designs and their ultimate success in terms of sales. In our research, we focus on shapes associated with the two basic emotional expressions of happiness and anger and how these shapes are perceived and interpreted in terms of the behavioral predispositions of friendliness and aggressiveness because prior research on human faces has given substantial attention to these expressions (e.g., Ekman 1993; Winkielman, Berridge, and Wilbarger 2005) and they are frequently employed in car design (Welsh 2006).

In studies of humans, emotional expressions are understood to indicate a person's inner emotional state. In particular, an upturned mouth and arched eyes result when a person feels happy, and a downturned mouth and slanted eyes result when a person feels angry (Ekman 1993). Emotional states prepare the organism for specific behavioral responses, and because emotional expressions are recognized as reliable indicators of inner emotional states, they contain highly relevant information about likely behavioral tendencies of another person (Frijda 1986). Most important, from an evolutionary point of view, they indicate whether the other person is prepared to attack or cooperate, the most basic tendencies in social behavior (Plutchik 1980). Thus, for their own well-being, people assess the meaning of emotional expressions in terms of the behavioral predispositions they imply—for example, going beyond the interpretation of the expression as reflecting happiness (the internal state of the person) to seeing the person as being friendly (the behavioral predisposition; Frijda 1986). Therefore, we formally define "perceived aggressiveness" as the predisposition implied by an observed angry facial expression and "perceived friendliness" as the predisposition implied by an observed happy facial expression. In our studies, we measure these predispositions, not the implied emotional states of happiness or anger. In the next sections, we explain when and how these perceptions of friendliness and aggression are also likely to result from product shapes that mimic emotional expressions. Furthermore, we present a theoretical reasoning for downstream effects of these perceptions on liking of the product's appearance.

Perception of Predispositions from Product Shapes

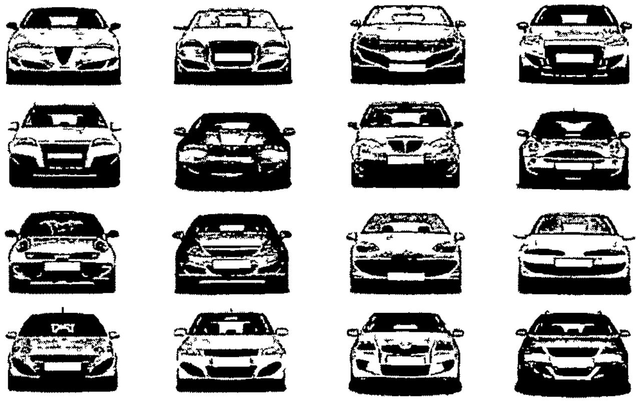
Numerous studies have shown that people readily recognize human shapes in nonhuman entities—for example, perceiving the shape of a bottle as suggesting a human body and the dial and hands of a clock as resembling a human face (for a review, see Epley, Waytz, and Cacioppo 2007). This phenomenon is a component of a broader process of anthropomorphism, which is the tendency to attribute humanlike characteristics, intentions, and behavior to nonhuman objects. Thus, people not only perceive morphological similarities between objects and humans, but they also tend to use the information provided by these physical similarities to infer underlying characteristics of the anthropomorphized object. Importantly, components of objects that could connote emotional facial expressions are especially likely to be anthropomorphized because, as we outlined in the previous section, these expressions constitute evolutionary highly relevant cues in the environment (Plutchik 1980). Thus, people may go beyond seeing the clock as having features that align with those on a human face to perceiving the clock as being friendly or aggressive.

As the preceding example suggests, we expect emotional expressions in products to trigger perceptual mechanisms similar to those triggered by human faces. In particular, research on the decoding of emotional expressions from human faces has established an important asymmetry between the perception of aggressiveness and friendliness. Whereas the perception of aggressiveness is cued by the shape of both the mouth and the eyes, with both features contributing almost equally to the impression, the perception of friendliness is assessed to a much greater degree on the basis of the shape of the mouth, with the shape of the eyes having less influence, though this effect may depend on the respondent's cultural background (Bassili 1979; Ellison and Massaro 1997; Katsikitis 1997; Yuki, Maddux, and Masuda 2007). The approaches chosen in this line of research range from showing only the upper or lower part of a face (Bassili 1979), to computer-generated artificial faces with fully crossed manipulation of the eye and mouth shape (Ellison and Massaro 1997), to multidimensional scaling of judgments of posed photographs (Katsikitis 1997), to experimentally manipulating photographed faces by substituting features of contradictory emotions between faces (Yuki, Maddux, and Masuda 2007). The faces generated by this latest approach are called chimeric faces (De Bonis 2003) and seemed the most promising for our studies because they provide an experimentally tightly controlled set of natural stimuli.

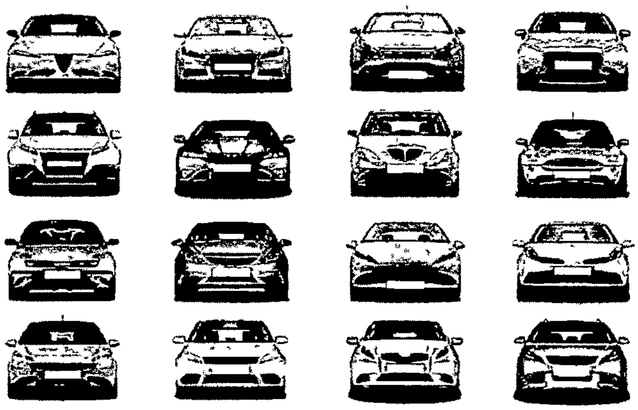
For the object of the current study, cars, Windhager et al. (2010) establish that the grille is perceived and interpreted as a human mouth and the headlights as human eyes (see also Aggarwal and McGill 2007). Thus, our experimental manipulation of emotional expressions involves mouth shape, represented by the grille, as either upturned (friendly) or downturned (aggressive), and eye shape, represented by the headlights, as either arched (friendly) or slanted (aggressive; see Figure 1, Panels A and B). Given people's inherent tendency to anthropomorphize nonhuman entities, we posit that the same asymmetry with respect to perceived behavioral predispositions reported for human faces will occur for product faces.

FIGURE 1
Compact Cars

A. Compact Cars with Upturned Grille and Arched Headlights



B. Compact Cars with Downturned Grille and Slanted Headlights



H_1: A downturned grille shape (a) decreases perceived friendliness and (b) increases perceived aggressiveness compared with an upturned grille.

H_2: (a) Headlight shape does not influence perceived friendliness. (b) Slanted headlights increase perceived aggressiveness compared with arched headlights.

H_1 and H_2 follow from prior research that has established people's generally high inherent readiness to anthropomorphize objects with humanlike morphological configurations (Aggarwal and McGill 2007; Epley, Waytz, and Cacioppo 2007; Windhager et al. 2010). Nevertheless, the tendency to anthropomorphize has also been conceptualized as an individual characteristic that makes some people especially prone to anthropomorphize nonhuman entities (Waytz, Cacioppo, and Epley 2010). In addition, people may be more likely to anthropomorphize under specific circumstances—for example, when they feel lonely (Epley, Waytz, and Cacioppo 2007). A person's tendency to "see" a human facial expression on a product may also depend on particular aspects of the product design and its similarities to an activated schema (Aggarwal and McGill 2007) Thus, the effects described here may be muted or enhanced depending on the extent to which people are able to perceive the design elements of the products as conveying human qualities The following hypotheses reflect this predicted moderation by anthropomorphism

> H_3 (a) The negative effect of a downturned (vs upturned) grille on perceived friendliness and (b) its positive effect on perceived aggressiveness is amplified by participants' anthropomorphization of the product (c) The positive effect of slanted (vs arched) headlights on perceived aggressiveness is amplified by participants' anthropomorphization of the product

Affective Responses to the Perception of Emotional Product Shapes

The preceding predictions center on people's perceptions of product "facial" expressions as having friendly or aggressive predispositions Next, we examine downstream consequences of these perceptions, beginning with affective responses to products perceived as having friendly or aggressive predispositions and then turning to preference for products with such expressions Research on human emotional facial expressions has established that the mere perception of an emotional expression is sufficient to trigger a differentiated affective response (Duclos et al 1989) That is, perceiving a given emotional expression with its implied latent behavioral predisposition results in an expression-specific affective response characterized by a particular proportion of elicited pleasure and arousal (Reisenzein 1994)—the two core components of any emotional experience (Russell 1980, 1989) In particular, as is directly relevant for our investigation, stimuli indicating a friendly behavioral predisposition, such as baby faces and happy human faces, trigger responses characterized by greater pleasure than arousal, while stimuli indicating an aggressive behavioral predisposition, such as angry human faces and snakes, trigger responses characterized by greater arousal than pleasure (Lang 1995, Tanaka-Matsumi et al 1995, Vrana and Gross 2004) On the basis of people's readiness to anthropomorphize emotional expressions in nonhuman entities, we would expect that the observation of an emotional expression in a product's design does not stop with the perceptions of a latent behavioral predisposition but triggers the corresponding pleasure–arousal pattern Thus, we posit the following

> H_4 (a) The perception of friendliness triggers an affective response predominantly characterized by pleasure (i e, the effect of perceived friendliness on experienced pleasure is greater than its effect on experienced arousal), and (b) the perception of aggressiveness triggers an affective response predominantly characterized by arousal (i e, the effect of perceived aggressiveness on experienced arousal is greater than its effect on experienced pleasure)

Preferences for Emotional Product Shapes

The affective response a stimulus elicits is a major determinant of its liking (Bagozzi, Gopinath, and Nyer 1999) In particular, people tend to prefer stimuli that elicit high levels of pleasure, making pleasure an essential determinant of overall liking (Donovan and Rossiter 1982) In accordance with this proposition, human faces with an upturned "mouth" and arched "eyes," conveying a facial expression of pure friendliness and thus eliciting a high level of pleasure, are preferred over all other emotional facial expressions (Vrana and Gross 2004) However, human facial expressions are unique Biological reasons limit the extent to which the emotional expression of the eyes can diverge from the emotional expression of the mouth (Ekman 1993) In other words, both facial elements tend to appear either happy or angry, it is difficult to express a mixture of both emotional states In contrast, when designers provide a product with an emotional "facial" expression, they are free to mix shapes with contradictory emotional meaning In particular, they can mix a happy expression, which is expected to add pleasure to the affective experience, with an angry expression, which is expected to add arousal to the affective experience According to the pleasure–arousal approach to emotional experience, such a mixture should be superior in terms of liking because arousal intensifies the experience of pleasure That is, the overall hedonic value of an affective response is maximized when pleasure meets arousal (Reisenzein 1994) In accordance with this notion, empirical studies in such diverse fields as aesthetic liking of art and abstract patterns (Berlyne 1974), preference for advertisements (Gorn, Pham, and Sin 2001), taste of food (Miniard, Bhatla, and Sirdeshmukh 1992), evaluation of acquaintances (Paulhus and Lim 1994), and effects of store atmosphere (Donovan and Rossiter 1982) have shown that arousal is a moderator that amplifies the positive effect of pleasure on preferences Thus, we posit the following

> H_5 (a) The pleasure elicited by a product's appearance increases its liking (b) The effect of elicited pleasure on liking is moderated by arousal, such that arousal amplifies the positive effect of pleasure

When we combine these predictions of the pleasure–arousal theory with the previous predictions regarding the perceptual mechanisms of emotional facial expressions, it becomes possible to derive detailed predictions about the combination of emotional shapes that consumers should prefer in anthropomorphized product designs Liking is maximized when a design is able to elicit high levels of pleasure and arousal simultaneously When a design implies a latent aggressiveness, it elicits high levels of arousal and only low levels of pleasure When a design implies a latent friendliness, it elicits high levels of pleasure and only low levels of arousal Therefore, we expect a design that implies both friendliness and aggressiveness to be most liked because this combination elicits high levels of pleasure *and* arousal Based on the asymmetry in perceiving these latent predispositions, one particular mixture of emotional facial elements can be expected to be most liked Because friendliness is only perceived in a product's "mouth," this feature must appear happy by being upturned Although aggressiveness can in principle be perceived in both a product's "eyes" and its "mouth," it must be communicated by the shape of the "eyes" because the "mouth" is already in use to communicate friendliness Therefore, the "eyes" must appear angry by being slanted to add arousal to the overall experience Thus, to summarize our theoretical reasoning throughout this section and to integrate the seemingly contradictory findings of Aggarwal and McGill (2007) and Windhager et al (2008), we propose the following

> H_6 (a) A downturned (vs upturned) mouth decreases consumers' liking of a design, and (b) slanted (vs arched) eyes increase consumer's liking of a design

Study 1: Perceived Emotional "Facial" Expressions

We designed the first study to test H_{1a}–H_{2b}—specifically, whether the decoding of emotional expressions in product "faces" follows the same perceptual rules as the decoding in human faces We expected that friendliness is only perceived in the mouth, while aggressiveness can be recognized in both the mouth and the eyes

Design, Stimuli, and Procedure

Participants in the first study were presented a set of car "faces" with emotional expressions and asked to indicate perceived aggressiveness and friendliness Our experimental design involved grille shape (upturned, downturned) and headlight shape (arched, slanted) as within-subject factors To ensure that the effects obtained are due to mouth shape and eye shape and not to some other inherent aspect of the stimulus material, we employed multiple operationalizations (16) of each of the four (mouth shape by eye shape) experimental cells An additional fifth cell contained the corresponding 16 neutral facial expressions as a control condition

The car faces were created in a two-stage approach First, the 16 most important compact cars on the German market were photographed in a comparable grey metallic paint under standardized conditions in a professional photographic studio Second, a team of professional car designers modified the grilles and headlights of these cars to resemble the shapes of happy- and angry-looking human faces (Ekman 1993) The resulting feature shapes were combined in a full 2 (grille shape upturned vs downturned) × 2 (headlight shape arched vs slanted) experimental design and accompanied by a neutral version (straight grille/straight headlights), resulting in five versions of each of the 16 original cars (for illustrative examples, see Figure 1, Panels A and B)

To validate that the shape manipulations of a downturned (upturned) mouth and slanted (arched) eyes primarily elicit the corresponding perceptions of aggressiveness (friendliness), we conducted a qualitative pretest with N = 44 typical car consumers (57% women, $M_{age} = 46\ 5$ years) To this end, we showed participants the neutral, upturned grille/arched lights, and downturned grille/slanted lights version of 1 of the 16 cars (randomly chosen) The participants were asked to produce for each of the three pictures the adjective that best described the car In accordance with our expectation, we found that the downturned/slanted car was most often described by an adjective related to aggressiveness (47%) and the upturned/arched car was most often described by a word related to friendliness (35%) For both versions of the car, "sportiness" was also mentioned several times (17% and 19%, respectively), but no other adjective was used frequently (all other frequencies < 8%)

To find out the extent to which people perceive friendliness and aggressiveness in the manipulated car faces, we created an online questionnaire in which participants were randomly assigned to 1 of the 16 multiple operationalizations Participants were shown all five versions of the chosen stimulus in random order In accordance with research on the perception of emotional expression in human faces (Tanaka-Matsumi et al 1995), participants were asked to indicate for each of these stimuli how strongly they perceive friendliness and aggressiveness, respectively, on visual analog scales with the endpoints labeled "not at all" and "very strong" The scales had a resolution of 1000 points, no further identifying marks other than the labels, and a default position for the slider at the lower end of the scale Participants had the opportunity to adjust the slider before providing their final evaluation, and they provided their judgments at their own pace A market research company assembled a sample of 263 participants (36 9% women, $M_{age} = 35\ 65$ years) according to the following criteria (1) The monthly household income should be in a range typical for new car buyers, and (2) participants had to have bought a new car within the past year or had to be planning to buy a car within the next two years Participants were financially compensated

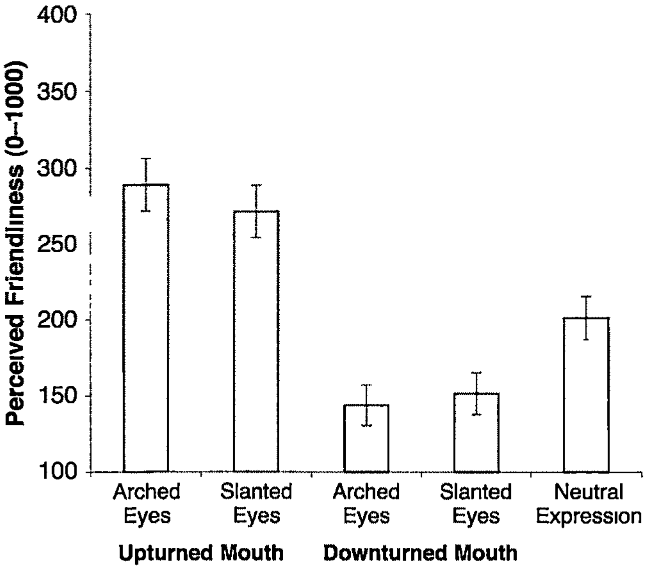
Results

We analyzed responses using a repeated measures analysis of variance (RM-ANOVA) with grille shape (upturned, downturned) and headlight shape (arched, slanted) specified as within-subject factors We performed separate analyses for perceived aggressiveness and friendliness Figure 2 depicts the means and standard errors for both these dependent measures

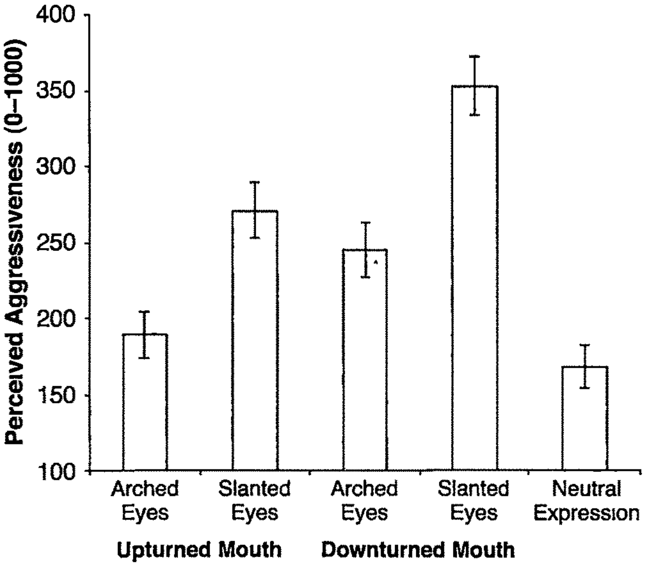
With respect to perceived friendliness, we obtained the highest rating for cars with upturned grille/arched lights (M = 289 07, SD = 17 22), closely followed by the combination of upturned grille/slanted lights (M = 271 50, SD = 17 16) The ratings for both the downturned grille/slanted lights (M = 151 54, SD = 13 72) and downturned grille/arched lights (M = 143 89, SD = 13 27) are considerably lower The results of the RM-ANOVA reveal that only the shape of the grille exerts a significant impact on perceived friendliness ($F(1, 262) = 97\ 47, p < \ 001, \eta_p^2 = \ 271$) but neither the main effect of headlights ($p > \ 713$) nor the interaction reaches significance ($p > \ 185$) Compared with the neutral control condition, all four conditions differ significantly ($p < \ 001$) In other words, an upturned "mouth" increases the perception of friendliness compared with a neutral shape, and a downturned "mouth" decreases such a perception A neutral shape itself lies in between and is perceived as expressing a moderate level of friendliness

FIGURE 2
Perceived Friendliness and Aggressiveness in Car Fronts Depending on Feature Shape with Standard Errors Indicated

A: Perceived Friendliness



B: Perceived Aggressiveness



The second dependent variable, perceived aggressiveness, reaches its maximum for a car with downturned grille/slanted lights (M = 353 00, SD = 19 65), followed by the combination of upturned grille/slanted lights (M = 271 03, SD = 18 02), downturned grille/arched lights (M = 244 91, SD = 17 96), and upturned grille/arched lights (M = 189 13, SD = 15 25) In contrast to the results obtained for perceived friendliness, both grille shape (F(1, 262) = 28 97, $p <$ 001, $\eta_p^2 =$ 100) and headlight shape (F(1, 262) = 31 57, $p <$ 001, $\eta_p^2 =$ 108) influence perceived aggressiveness, according to the RM-ANOVA However, the interaction of these factors was not significant ($p >$ 257) The upturned grille/arched lights condition does not differ significantly from the neutral control condition ($p =$ 594), though all other conditions do ($p <$ 001) This indicates that either slanted eyes or a downturned mouth (or both) must be present to elicit a perception of aggressiveness However, arched lights combined with an upturned grille do not elicit a remarkable perception of aggressiveness and are on the same level as neutral shapes

Discussion

The results of our first study replicate prior findings, indicating that consumers perceive cars, at least to some extent, as having faces similar to those of people (Aggarwal and McGill 2007, Windhager et al 2010) Participants reported seeing latent behavioral predispositions in car faces and seemed to perceive the grille as a human mouth and headlights as human eyes to judge the meaning of emotional expressions More important, we were able to support our hypotheses by showing that, in line with what is already known about human faces, perception of friendliness is exclusively influenced by the shape of the grille (H_{1a} and H_{2a}) while perception of aggressiveness is influenced by both grille (H_{1b}) and headlight (H_{2b}) shape In other words, an upturned grille, like the smile it resembles, conveys a friendly behavioral predisposition, whereas a downturned one conveys an aggressive behavioral predisposition Headlights do not influence perceived friendliness, but slanted lights convey aggressiveness This finding extends existing knowledge with the notion that some fundamental principles of emotional decoding of human faces also hold for anthropomorphized objects and helps designers focus their work on particular features when they intend to express a certain behavioral predisposition in a product's "face"

Study 2: Emotional Facial Shapes and Liking: A Causal Model of the Underlying Mechanism

Study 1 establishes that people use the same perceptual schemata to decode emotional expressions in a product's face that they do in human faces However, it does not provide further information about the important practical and theoretical question which combination of emotional shapes consumers prefer Instead of providing a clear picture, existing research poses a theoretical puzzle regarding people's preferences for emotional expressions in product faces While Windhager et al (2008) find evidence for a preference for angry expressions in car fronts, Aggarwal and McGill (2007) find that people prefer car fronts with a smile A closer examination of the methodological approaches these two research teams employed might help identify differences in the respective approaches responsible for the contradictory findings Participants in the Windhager et al study indicated their liking of existing car models and showed a preference for car models that conveyed an expression of power—in particular, models that tended to sit low or wide and have slanted headlights with a wider air intake Windhager et al interpret these findings as showing a preference for aggressive or angry-looking cars However, a difficulty of this research is that it used existing car models and did not systematically vary the shapes of features within a given model Although appealing in its use of real products, this method creates a confound between designer and design That is, the tendency for participants to like angry-looking cars, such as the BMW 5 series, might be the result of talented designers at BMW choosing an angry design The preference may come from the overall quality of the design, not its specifics Had less talented designers produced angry cars, the designs might not have been so well liked

Taking a different approach to the evaluation of car faces, Aggarwal and McGill (2007) use a methodology that allowed for more finely tuned inferences regarding the effect of facial features on evaluations Specifically, they presented an otherwise identical model of a car with its grille in a turned up or down position so that the specific, independent effect of the feature could be examined They showed that a smiling grille is preferred over a frowning grille, but only if the car could be anthropomorphized (when it was presented in human terms) In contrast, when the car was presented as an object that inhibited anthropomorphization, people's preference did not depend on grille shape This finding points to the importance of perceiving the analogy between a product's face and a human face before effects of emotionalized facial features can occur If this process of anthropomorphism is actively inhibited, as in Aggarwal and McGill's second condition, the effect of emotional expressions on liking seems to diminish

The current research integrates and extends the findings of both these prior investigations of car faces by focusing more clearly on the two major facial features that convey emotionality the eyes/headlights and the mouth/grille (Welsh 2006) As outlined previously, Windhager et al 's (2008) experimental design considers only the emotionality of the headlights, while Aggarwal and McGill (2007) exclusively investigate the emotionality of the grille To investigate the potentially interactive effect of these two design features on liking, we independently manipulated and crossed both elements with each other, as in our first study Furthermore, while Aggarwal and McGill provide important insights by considering the effect of hindering anthropomorphization, they do not examine the plain effects of emotionalized facial features in products without any preceding activation of human or object schemata The current study is intended to do so and to provide more detailed information about the underlying process

Design, Stimuli, and Procedure

To test the mediating mechanism between headlight and grille shape on the one hand and liking on the other hand, we employed a 2 (headlight shape arched vs slanted) × 2 (grille shape upturned vs downturned) × 16 (multiple car operationalizations) between-subjects design The employed stimulus material was identical to that of our first study Participants were randomly assigned to 1 of the 64 experimental stimuli and were asked to evaluate it on several measurement scales, which were each shown on a separate screen, with the car's picture always presented on the top of the page Whenever possible, we used existing measures of the constructs and adapted them to this study's context First, they had to indicate their global liking of the car's design on a seven-point Likert-type scale ("How much do you like this car's design?" 1 = "I don't like it," and 7 = "I like it very much", adapted from Windhager et al 2008) Next, they were asked to indicate their perception of latent behavioral predispositions In contrast to the first study, we used two-item measures for each dimension, established in research on human face evaluation, to capture more facets of the predispositions and increase the comparability to research on human face perception (Oosterhof and Todorov 2008, Tanaka-Matsumi et al 1995) In particular, participants were asked to indicate perceived friendliness and trustworthiness and perceived aggressiveness and dominance on separate seven-point scales ("This car looks friendly/trustworthy/aggressive/dominant", 1 = "does not apply," and 7 = "applies") We pooled the first two items to build the latent friendliness construct (Cronbach's α = 89) and the last two items to build the latent aggressiveness construct (Cronbach's α = 80) Thereafter, they were asked to indicate their experienced pleasure and arousal measured by the Self-Assessment Manikin scale, which, similar to the original version, consisted of nine images (Lang 1980) Previous research has confirmed desirable psychometric properties of this scale (Bradley and Lang 1994), and thus, it seems adequate for the current research context Finally, participants were also asked to indicate to what extent they had anthropomorphized the car's face on another seven-point item (anthropomorphic perception "How strongly does this car design remind you of a human face?" 1 = "hardly," and 7 = "strong") Prior research has established high correlations among measures of anthropomorphism (e g , Aggarwal and McGill 2007, from which the preceding measure was adapted, Kim and McGill 2010), giving us confidence in this single-item measure of the construct [1]

A market research company assembled a sample of members of a consumer online panel and screened out participants who finished the questionnaire in less than half the expected time and had a monotonous answering scheme, resulting in a final sample of N = 599 participants (48% women, M_{age} = 44 years), who were financially compensated for participation

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[1] In addition to our global liking measure, we also included two further measures that tap related aspects in an automotive context Intention to test drive ("I would like to test drive this car", 1 = "disagree," and 7 = "agree") and to buy the car ("I could imagine buying this car", 1 = "disagree," and 7 = "agree") Both measures are highly correlated with our global liking judgment ($r >$ 78, $p <$ 001) and are affected in a similar way We also included a measure to control for the alternative that the emotional shapes affect consumers' liking because of the perceived innovativeness of the car's design ("I consider this car design [compared to recent car designs] to be ", 1 = "classic," and 7 = "innovative", adapted from Carbon and Leder 2005) We tested this measure as an additional mediator in an alternative model in which it was specified to mediate, in addition to the paths described in our theoretically derived model, between the experimental conditions and liking Because our baseline model is not nested within this alternative, we cannot perform a formal test of comparative model fit However, both Akaike information criteria ($AIC_{baseline}$ = 21,409 20, $AIC_{alternative}$ = 23,104 88) and Bayesian information criteria ($BIC_{baseline}$ = 21,571 83, $BIC_{alternative}$ = 23,293 88) indicate that including the innovative measure is not justified Moreover, it does not have a significant effect on liking (p = 626), indicating that our baseline model is a sufficient representation of the data

Results

The second study is intended to provide further evidence for H_{1a}–H_{2b} and to test H_{3a}–H_{6b} Figure 3 provides an overview of our hypotheses and the implied causal model In particular, as proposed in H_{1a}–H_{2b} and already supported by our first study, we expect γ_1 to be negative, γ_2 and γ_3 to be positive, and γ_4 to be nonsignificant That is, perceived friendliness is only affected by grille shape, while perceived aggressiveness is affected by both grille and headlight shape As postulated in H_{3a}–H_{3c}, we further expect that an anthropomorphic perception amplifies the effects given by γ_1, γ_2, and γ_3 According to H_{4a}, we expect β_1 to be larger than β_2 That is, perceived friendliness triggers predominantly pleasure and, only to a lesser extent, arousal H_{4b} postulates that β_3 is larger than β_4, which means that perceived aggressiveness triggers more arousal than pleasure H_{5a} states that experienced pleasure increases liking (β_5)—an effect that is, as H_{5b} states, further amplified by arousal (β_7)

Table 1 provides an overview of the relationships between the eight constructs and the four interaction effects given in the hypothesized causal model summarized in Figure 3 Furthermore, the bottom of Table 1 provides means and standard deviations of our model's endogenous variables conditional on the experimental condition These descriptive statistics are accompanied by the results of a one-factorial ANOVA, which tested for mean differences between the experimental cells

Ultimately, it is of primary interest which combination of feature shapes consumers like best According to our theoretical reasoning, we would expect the highest liking ratings for cars with an upturned grille (H_{6a}) and slanted headlights (H_{6b}) Thus, before we evaluate the process mechanisms of our model, we intend to establish the total effect of the shapes on liking Figure 4 provides the means and standard errors of the liking judgments conditional on the experimental manipulations A two-factorial ANOVA shows that an upturned grille is preferred over a downturned grille ($F(1, 595) = 9\ 65, p = \ 002$) and slanted headlights are preferred over arched headlights ($F(1, 595) = 3\ 89$, $p = \ 049$) However, these two features do not interact with each other ($F(1, 595) = 1\ 33$, $p = \ 249$) Thus, our data support H_{6a} and H_{6b}

Following the guidelines MacKenzie (2001) proposes for the analysis of experiments using structural equation models, we estimated the causal model shown in Figure 3 using Mplus 4 1 applying the scaled Satorra–Bentler procedure (Muthén and Muthén 2007) We constrained the error variances of the two items measuring aggressiveness and the two measuring friendliness to be equal to ascertain that the model is locally identified The resulting overall fit measures indicate that our model is a plausible representation of the structures underlying the empirical data $\chi^2(47) = 246\ 40$, $p < \ 001$, comparative fit index = 926, Tucker–Lewis index = 890, root mean square error of approximation = 084, and standardized root mean square residual = 050 Of the 13 hypotheses, 12 are supported, with parameter estimates significant at least at the 5% error level and in the expected direction

Perceived aggressiveness is significantly influenced by headlight shape (slanted, γ_3 = 170, $p < \ 001$) and grille shape (downturned, γ_2 = 115, $p < \ 001$) The effect of grille

FIGURE 3
Proposed Underlying Process that Mediates the Effect of Feature Shape on Liking

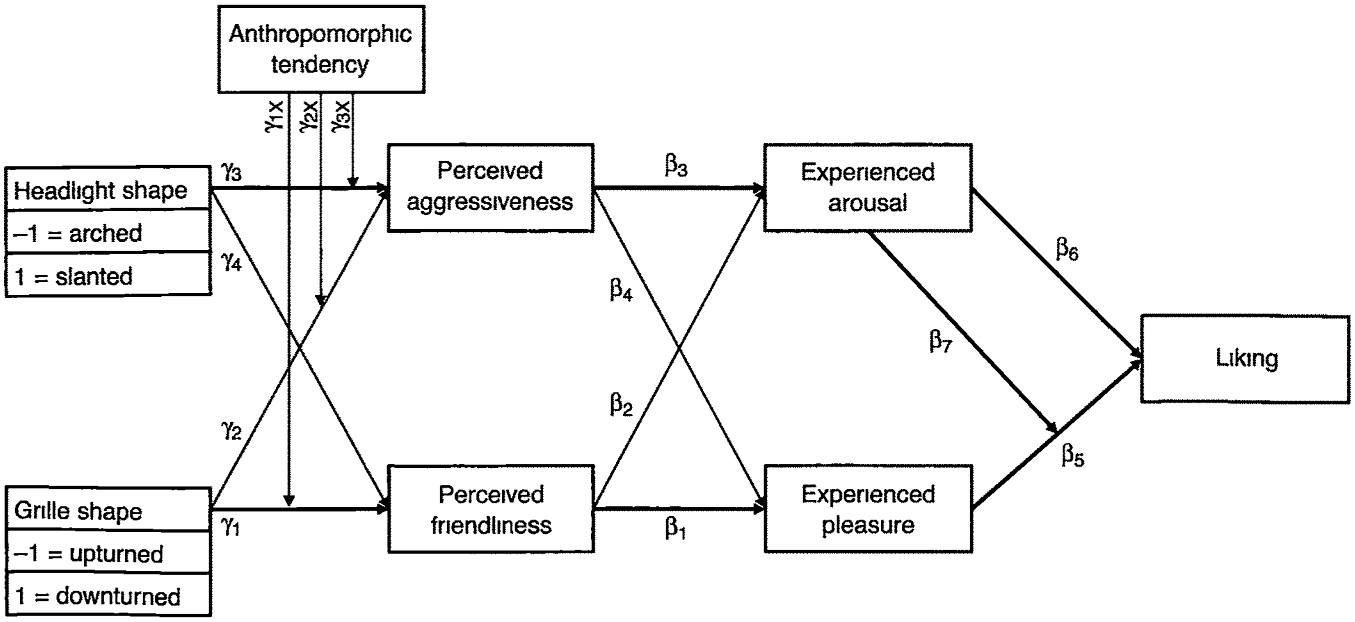


TABLE 1
Correlations, Means, and Standard Deviations of All Constructs Included in the Causal Model of Study 3

Variables	Correlations 1	2	3	4	5	6	7	8	9	10	11	12
1 Headlight shape	1											
2 Grille shape	06	1										
3 Headlight shape × grille shape	– 02	05	1									
4 Anthropomorphic perception	03	– 02	04	1								
5 Anthropomorphic perception × headlight shape	00	04	– 02	03	1							
6 Anthropomorphic perception × grille shape	05	00	03	02	04	1						
7 Perceived aggressiveness	20***	13**	07	17***	01	09*	1					
8 Perceived friendliness	– 02	– 27***	– 03	15***	– 09*	– 17***	– 30***	1				
9 Experienced arousal	07	– 02	00	22***	02	– 03	16***	41***	1			
10 Experienced pleasure	04	– 12**	04	12**	– 02	– 13**	– 00	62***	58***	1		
11 Experienced arousal × experienced pleasure	– 03	– 04	– 04	– 04	– 02	– 05	– 08	– 02	– 09*	– 01	1	
12 Liking	08*	– 12**	04	12**	– 03	– 09*	04	57***	54***	84***	03	1
Upturned Grille/Arched Headlights												
M				3 68			3 08	4 15	4 50	5 81	60	4 43
SD				1 70			1 69	1 59	2 01	1 84	98	1 67
Upturned Grille/Slanted Headlights												
M				3 62			3 54	4 17	4 79	5 83	62	4 57
SD				1 70			1 75	1 60	2 00	2 03	1 02	1 70
Downturned Grille/Arched Headlights												
M				3 44			3 24	3 29	4 39	5 12	61	3 82
SD				1 80			1 77	1 73	2 11	2 13	1 32	1 83
Downturned Grille/Slanted Headlights												
M				3 70			4 18	3 21	4 69	5 49	47	4 29
SD				1 75			1 86	1 59	2 08	1 94	1 14	1 63
One-factorial ANOVA				n s			***	***	n s	**	n s	**

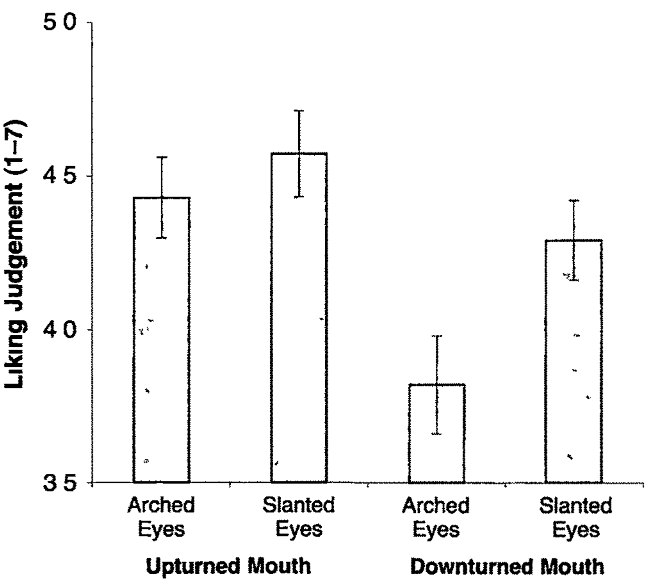
*$p < 05$
**$p < 01$
***$p < 001$
Notes n s = not significant

shape is further amplified by anthropomorphic perception ($\gamma_{2X} = 073$, $p < 050$) Moreover, we found a significant main effect of anthropomorphic perception ($\gamma = 158$, $p < 001$) However, the interaction of the two feature shapes and the interaction between headlights and anthropomorphic perception do not reach significance ($p > 131$) Therefore, H_{1b}, H_{2b}, and H_{3b} find statistical support, but we must reject H_{3c}

In accordance with H_{1a}, perceived friendliness is significantly influenced by grille shape (downturned, $\gamma_1 = -242$, $p < 001$)—an effect further amplified by anthropomorphic perception ($\gamma_{1X} = -162$, $p < 001$)—but, as H_{2a} predicts, not by headlight shape ($\gamma_4 = -005$, $p = 893$) Moreover, we find a significant main effect of anthropomorphic perception ($\gamma = 138$, $p < 001$) The interaction of the two feature shapes and the interaction between headlights and anthropomorphic perception do not reach significance ($p > 077$) Therefore, H_{1a}, H_{2a}, and H_{3a} find statistical support

As H_{4a} predicts, perceived friendliness triggers predominantly pleasure ($\beta_1 = 820$, SE = 042, $p < 001$) accompanied by a comparably smaller amount of arousal ($\beta_2 = 628$, SE = 045, $p < 001$, $\Delta_{\beta1,\ \beta2} = 192$, SE = 045, t(45) = 4 293, $p < 001$) In contrast, as H_{4b} predicts, perceived aggressiveness triggers predominantly arousal ($\beta_3 = 461$, SE = 051, $p < 001$) accompanied by a comparably smaller amount of pleasure ($\beta_4 = 304$, SE = 048, $p < 001$, $\Delta_{\beta3,\ \beta4} = 157$, SE = 045, t(45) = 3 511, $p = 001$) Thus, both H_{4a} and H_{4b} find empirical support

FIGURE 4
Liking of Car Fronts by Shape of Grille and Lights with Standard Errors Indicated



Finally, liking is positively affected by pleasure (β_5 = .790, $p < .001$), an effect further enhanced by the interaction of pleasure and arousal (β_7 = .039, $p = .021$). Moreover, the main effect of arousal also reaches statistical significance (β_6 = .089, $p = .004$). Thus, our empirical findings also support H_{5a} and H_{5b}. In total, 71.4% of the variance in our liking measure can be explained by the current model.

Prior theory has suggested that arousal and pleasure are likely to be positively correlated, especially when the evaluated stimuli do not elicit strong displeasure (Bradley and Lang 1994), and that perceived friendliness and aggressiveness are negatively correlated (Windhager et al. 2008). Thus, we included these correlations in our model estimation and found empirical support for both ($r_{\text{pleasure, arousal}}$ = .208, $p < .001$, $r_{\text{friendliness, aggressiveness}}$ = –.236, $p < .001$). In addition, we performed a formal test of mediation to examine the sequential pattern of effects hypothesized in our model. We tested an alternative model to our previously described baseline model that additionally included direct paths from our experimental manipulations on liking. Because we used Satorra and Bentler's (2001) scaled chi-square statistic for our calculations, we followed their recommended procedure to obtain the appropriate chi-square difference test statistics. We found that including the direct paths did not significantly improve the model's fit ($\chi^2_d(3)$ = 6.30, $p = .100$), which indicates full mediation. In summary, our analyses support the hypothesized two-step mediation by perceptual and emotional processes.

Discussion

The results of the mediation model provide rich insights into the influence of grille shape and headlight shape on the evaluation of cars. First, our findings indicate that people perceive emotional expressions in car "faces" in the same way they do in human faces, thus replicating findings of Study 1. That is, friendliness is only perceived in an upturned grille (mouth), while aggressiveness is perceived in both a downturned grille (mouth) and slanted headlights (eyes). It is noteworthy that the effect of the grille shape on perceived predispositions is moderated by people's anthropomorphic perception of the car fronts. In other words, the effects become stronger when people see the car front as a face. Unexpectedly, the effect of headlight shape on perceived aggressiveness was not moderated by anthropomorphic perception. This finding is probably due to the established insight that the eyes are the most important perceptual feature of the human face, which is always considered first and longer than all other facial features (Windhager et al. 2010). Thus, eyes are probably such an important facial feature that they are perceived as humanlike independently of a person's anthropomorphic perception.

In summary, consumers seem to evaluate cars not solely on the basis of the direct aesthetic appeal of grille or headlight shape but also because these shapes convey different emotional expressions. However, the overall liking of a car front's appearance does not result strictly from the inherent valence of the involved emotions but rather is a joint function of the pleasure and arousal elicited by perceived friendliness and aggressiveness. While perceived friendliness primarily triggers pleasure (H_{4a}), an additional perception of aggressiveness enhances the emotional experience by adding a high level of arousal (H_{4b}). In accordance with the pleasure–arousal theory of emotions (Russell 1980, 1989), our results further show that pleasure and arousal both positively affect liking of a car's design. Importantly, arousal not only yields a main effect but also moderates the effect of pleasure on liking. That is, arousal increases the effect of pleasure on liking, which further supports the notion of a complementary function of pleasure and arousal, in support of H_{5b}. In conclusion, the mediation model sheds light on the underlying mechanisms that make people prefer a car with an upturned grille (H_{6a}) but slanted headlights (H_{6b}).

Study 3: The Best-Selling Mix of Emotional Facial Shapes

The third study is aimed at generating evidence for the external validity of the results. We also estimate the impact of designing a product's appearance according to human facial shapes on its ultimate success in terms of sales.

Design, Stimuli, and Procedure

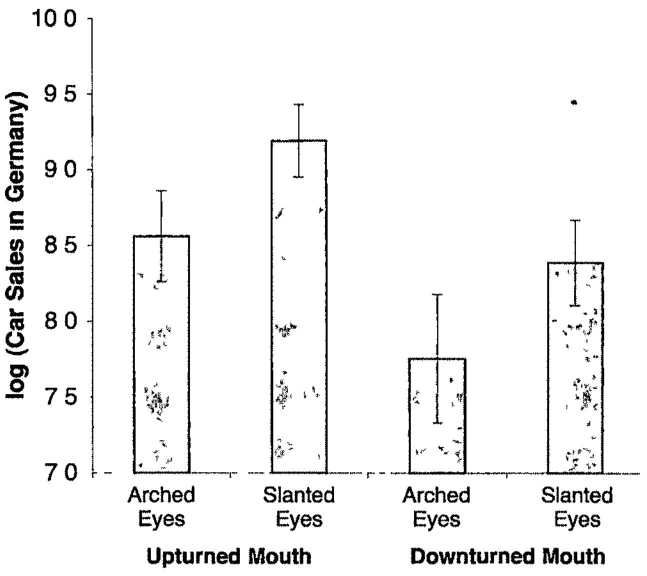
We chose to analyze car sales in the German market during 2008 because the German Federal Motor Transport Authority (Kraftfahrt Bundesamt, KBA) provides official statistics of admissions of new cars. We analyzed all mass-market car segments (from mini cars to executive cars, omitting luxury cars, sports cars, sport utility vehicles, and vans) but omitted cars that were sold less often than 100 times during 2008 from the analysis because they constitute outliers and are not important market players. Likewise, we also omitted cars that were introduced during 2008 because, on the one hand, their sales are biased due to their recent introduction (attraction of the new) and, on the other hand, any extrapolation of partial data onto the whole year might be biased because of seasonal effects We included 123 cars in the analysis, which account for approximately 73% of all car sales in Germany during 2008 For each car, we obtained the aggregated sales during 2008 as the dependent variable from the statistics of the transport authority To determine the shape of the cars' headlights and grilles, we asked three psychologists trained in the categorization of emotional facial expressions according to Ekman (1993) to rate images of the cars according to the shape in a forced-choice procedure All three judges were blind to our research hypotheses We intentionally based the categorization of the cars on expert judgments, which are less likely than consumer judgments to be biased by preexisting associations, because we are interested in the basic relationship between two inherently objective measures the mere product shape and its actual sales The ratings achieved a reliability of 85 according to the proportional reduction in loss approach (Rust and Cooil 1994), which indicates adequate observer agreement For cars for which one rater disagreed with the other two, we chose the shape categorization of the majority The respective car images for the expert ratings were provided by a leading commercial car database (Eurotax-Glass's International), which also provided information on the cars' market price as a control variable for the analysis Furthermore, we obtained data on the subjectively experienced brand image and the environmental friendliness of the cars from a leading German magazine (*Focus*, www focus de), which conducted a large consumer survey with 182,475 ratings for the first control variable and 177,811 ratings for the second

Results

Before conducting the analysis, we checked the distributional properties of the dependent variable sales, because the automobile market is characterized by a high amount of heterogeneity and likely outliers In accordance with this expectation, we found the sales variable to be highly positively skewed Thus, we log-transformed sales to normalize the distribution and allow an analysis that includes all cases We checked for the distribution of the log-transformed sales and found the assumption of normality fulfilled We used this transformed variable for all subsequent analyses Figure 5 shows the means and standard errors of the log-transformed sales variable depending on the factors grille shape (upturned vs downturned) and headlight shape (arched vs slanted)

As Figure 5 shows, and in accordance with the earlier results, we found the highest sales for car designs with an upturned grille but slanted headlights (M = 9 19, SE = 24), followed by an upturned grille with arched headlights (M = 8 56, SE = 30), a downturned grille/slanted headlights (M = 8 38, SE = 28), and a downturned grille/arched headlights (M = 7 75, SE = 42) We tested these mean differences for significance by regressing the log-transformed sales on headlight shape (–1 = arched, 1 = slanted), grille shape (–1 = upturned, 1 = downturned), and their interaction As controls, we included price of the car, rated brand image, rated environmental friendliness, and segment (dummy coded small cars served as the reference category, and five categories were considered in total) to account for potentially confounding effects In accordance with the results for liking in the second study, the regression model shows a negative effect of a downturned (vs upturned) grille shape (b = – 359, t = –2 325, $p =$ 022) and a positive effect of a slanted (vs arched) headlight shape (b = 328, t = 2 106, $p =$ 037) Furthermore, the model indicated a positive effect of brand image (b = 1 501, t = 1 886, $p =$ 062) and negative effects for compact cars (b = – 702, t = –1 779, $p =$ 078), midsize executive cars (b = –1 357, t = –2 601, $p =$ 011), and executive cars (b = –1 897, t = –2 207, $p =$ 029) All other effects were not significant ($p >$ 626), and the model explains 34% of the variance in the log-transformed sales

FIGURE 5
Sales of Cars by Shape of Grille and Lights with Standard Errors Indicated



Discussion

The third study extended the findings of Studies 1 and 2 to a real-world dependent variable that is of maximal relevance to marketers the absolute sales of a product We were able to replicate our questionnaire-based results in the context of sales That is, for both liking judgments and sales, customers prefer the combination of an upturned grille and slanted headlights Importantly, this effect also holds when we control for potentially confounding variables such as price, brand image, environmental friendliness, and car segment Thus, an appealing combination of emotional expressions in a design conducive to anthropomorphizing not only fosters liking but also pays off in monetary terms

Study 4: Generalizability to Other Product Categories: Cell Phones

The first three studies examine the effect of product shapes conducive to anthropomorphizing using car fronts and provide converging evidence that consumers prefer the combination of an upturned grille/mouth and slanted headlights/eyes because of the simultaneous elicitation of pleasure and arousal this combination of features achieves Although all three studies attest to the robustness of the general pattern, the generalizability of the obtained results is nevertheless questionable because we used only cars as stimuli Cars are used in a more social manner, and a mixed expression of friendliness and aggressiveness may be particularly appealing for drivers in negotiating the complexities of traffic Therefore, we cannot rule out the caveat that cars are a special product category and the obtained preferences for feature shapes only hold for cars To examine the generalizability of the obtained effects and the underlying mechanism, we designed the fourth study to replicate the results for a completely unrelated product category—namely, cell phones, which provide an example of the increasingly important product category of consumer electronics

Design, Stimuli, and Procedure

A modern cell phone with two upper buttons in a configuration so that they might be perceived as corresponding to eyes and a larger lower button corresponding to a mouth served as a starting point for the stimulus material A professional graphic designer removed all indications of the particular manufacturer of the cell phone and manipulated the buttons according to the experimental conditions To this end, the designer manipulated both upper "eye" buttons on two levels (arched vs slanted) and the lower "mouth" button on two levels (upturned vs downturned) Figure 6 depicts the resulting images

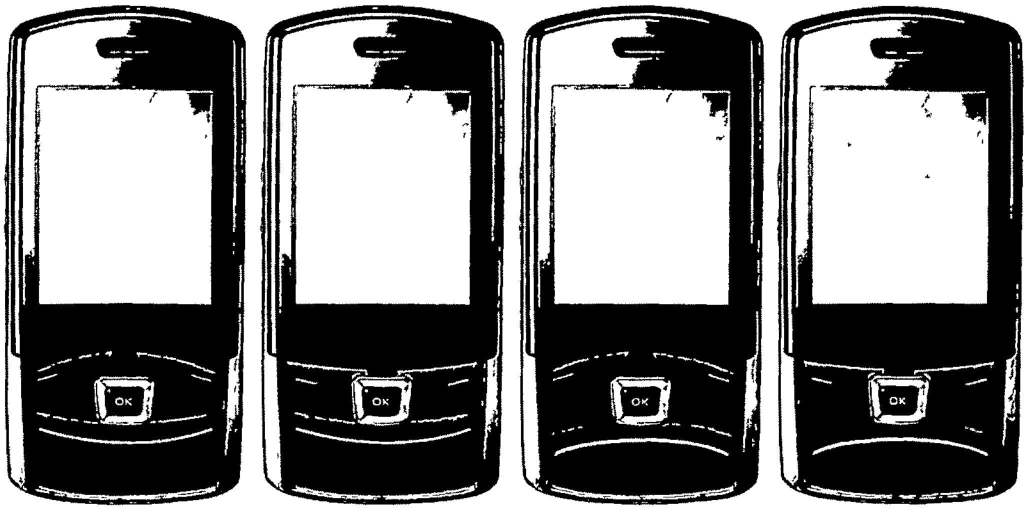
We manipulated both factors within subjects, resulting in four images that were shown in random order Participants indicated their liking of the cell phone on a seven-point Likert-type scale and arousal and pleasure on a nine-picture version of the Self-Assessment Manikin scale (Lang 1980) A market research company assembled a sample of 146 consumers (47% women, M_{age} = 44 49 years), who were financially compensated for participation

Results

To account for the repeated measurement structure of the data, we used linear mixed models that include a random intercept to account for the intercorrelation induced by the repeated measurements All analyses are based on the LME function of the NLME library of the statistical package R with all estimation parameters set to their defaults (Pinheiro et al 2008) Figure 6 contains the descriptive statistics, in accordance with the previous studies, a cell phone with upturned mouth and slanted eyes received the highest liking ratings To test for significance of the mean differences and to establish arousal and pleasure as mediating constructs, we estimated three types of regression equations In the first model, we regressed liking on the effect-coded experimental conditions and their interaction In accordance with the results for car fronts, we found a positive effect of a slanted (vs arched) eye shape (b = 217, t = 4 393, $p <$ 001) and a negative effect of a downturned (vs upturned) mouth shape (b = – 334, t = –6 745, $p <$ 001) but no interaction (p = 972)

Second, we regressed arousal and pleasure on the experimental conditions For arousal, we found a positive effect of a slanted eye shape (b = 219, t = 4 361, $p <$ 001) and a negative effect of a downturned mouth shape (b = – 229, t = –4 566, $p <$ 001) but no interaction (p = 785) Although we would have expected the effect of eye shape to be larger than the effect of mouth shape, a post hoc test revealed that the absolute values of these two coefficients do not differ (Δ_b = 010, SE = 071, t(435) = 145, p = 885), indicating

FIGURE 6
Cell Phones with Shape Manipulation and Corresponding Liking Judgments



Experimental Condition	Upturned Mouth		Downturned Mouth	
	Arched Eyes	Slanted Eyes	Arched Eyes	Slanted Eyes
Liking judgment	M = 4 42 (SE = 13)	M = 4 86 (SE = 12)	M = 3 76 (SE = 15)	M = 4 19 (SE = 14)

that in this case, both eyes and mouth equally shaped the experience of arousal For pleasure, we found a positive effect for a slanted eye shape ($b = 291$, $t = 4 996$, $p < 001$) and a negative effect for a downturned mouth shape ($b = -517$, $t = -8 874$, $p < 001$) but no interaction ($p = 725$) Importantly, a post hoc test revealed that the absolute values of these two coefficients differ significantly ($\Delta_b = 226$, $SE = 082$, $t(435) = 2 743$, $p = 006$), indicating that, in accordance with our prior findings, the mouth is a more powerful trigger of pleasure than the eyes

Finally, we regressed liking on the experimental conditions in addition to pleasure, arousal, and their interaction Again, we found significant effects of pleasure ($b = 1 300$, $t = 28 027$, $p < 001$, Sobel $z = 8 460$, $p < 001$), arousal ($b = 202$, $t = 4 131$, $p < 001$, Sobel $z = 2 999$, $p = 003$), and their interaction ($b = 061$, $t = 1 932$, $p = 054$, Sobel $z = 1 888$, $p = 059$) but no effect of the experimental conditions anymore (all $ps > 305$), indicating full mediation

Discussion

Study 4 provides evidence that the proposed preference for an upturned mouth and slanted eyes in products conducive to anthropomorphizing is not limited to the design of car fronts but can be extended to other product categories that are not as heavily associated with the face metaphor, such as cell phones Importantly, we replicated not only the general liking pattern but also the proposed underlying mechanism of an enhancement in the experienced pleasure accompanied by arousal, which further attests to the robustness of the obtained results

General Discussion

This article begins with the observation that consumers frequently see faces on products and that marketers can design these "faces" to convey brand image and personality The front of a car may readily be perceived as a face, given the standard placement of the two headlights and the grille Clocks and watches are also commonly described as having a face, especially because they frequently have a round dial and hands that in the right combination tip up or down like smiles or frowns However, functional components such as buttons, knobs, clasps, and openings make many other products candidates for anthropomorphism, including cell phones, lamps, handbags, printers, and chests of drawers Depending on the placement of windows, doors, and sashes, some houses may seem to have a face Even when a product's practical components do not configure in a way to suggest facial features, trim can be applied to make it appear more like a human face (e g , Kim and McGill 2010) Prior research has suggested that faces automatically draw attention, trigger strong emotions, and affect liking, making them a potentially fruitful target for design efforts However, currently, designers are afforded little guidance from consumer research about which features to use to communicate a desired emotional meaning and which combination of emotional shapes consumers prefer In four empirical studies, we fill this gap in the literature by providing insights into the perceptual and evaluative effects of employing emotional shapes in the design of features corresponding to the human mouth and eyes, respectively We obtain three central insights with both theoretical and practical implications through these studies

First, when judging the meaning of the expression of a product conducive to anthropomorphizing, people use the same facial elements in the same combination that they do in judging human faces That is, friendliness is primarily decoded from the mouth, whereas aggressiveness can be decoded from both the mouth and the eyes At least for the mouth, the perception of these latent behavioral predispositions is further enhanced when people show a tendency to process the product's "face" like a human face, which points to the notion that anthropomorphic design may tap deeply anchored perceptual principles of human face perception (Windhager et al 2010) For marketing managers, this finding has important implications for the transformation of the brand's inherent attributes into specific design features For example, if one of a brand's core attributes is kindness and a company's cars should accordingly look friendly, this company is well advised to focus on the car's grille and give it an upturned shape Critically, the designers should not waste time and resources attempting to design the shape of the car's headlights in a friendly way, though it is conceivable to imagine the temptation to do so in the absence of our findings

Second, the conflicting findings of Windhager et al (2008), who find a preference for aggressive-looking cars, and Aggarwal and McGill (2007), who find a preference for smiling cars, can be reconciled by our present finding that it is not about either an aggressive or a friendly look per se but rather about the optimal combination of emotional shapes to convey friendliness and aggressiveness simultaneously In particular, we show that the mix of a friendly, upturned mouth and aggressive, slanted eyes is preferable to consumers and that this preference is due to potential to increase pleasure and arousal simultaneously Our studies also extend the results of Aggarwal and McGill (2007), who confine their analysis to evaluating products that marketers had first presented in human terms In our studies, we merely show that consumers anthropomorphize designs without any explicit request to interpret the design in human terms Nevertheless, participants in our studies perceived the anthropomorphized designs and their emotional expressions consistently in human terms and judged them accordingly From an applied point of view, this is an important extension of extant insights because it points to the generic applicability of the observed findings to the design of products independently of any other marketing attempts to facilitate anthropomorphism

Finally, we replicated the preference for products with a friendly mouth and aggressive eyes in a product category other than cars—cell phones—which attests to the robustness and generalizability of the current findings According to the coherent results across these different product categories, we would expect that the findings are generic and thus should also hold for other product categories conducive to anthropomorphizing, whose features potentially correspond to mouth and eyes Furthermore, we find that cars with such a combination of emotional expressions not only are better liked in our laboratory studies than either neutral or otherwise emotionalized designs but also sell better in the market, which strongly suggests that it is important for product designers to consider the emotional expressions of their product shapes carefully to increase their products' success Our findings provide concrete guidance on how this can be achieved

With regard to further research, cultural differences regarding the perception of emotional expressions conveyed by a car's grill and headlights would be of interest As we suggested in the "Theoretical Background and Hypotheses" section, particular differences are to be expected in Asian and collectivist cultures because the eyes represent a much more important source of information regarding the emotional feelings of other people in these cultures An appropriate cross-cultural study, most importantly including Asian cultures, would add to the understanding of anthropomorphism in general and to limitations of the use of emotionalized shapes in particular

Furthermore, it would also be of interest to determine the extent to which the perceptions of these mixed emotions (aggressive headlights, friendly grille) remain constant over multiple exposures Because customers generally scrutinize a vehicle and, therefore, its design intensively before purchasing, this is a highly relevant question, especially from a practical point of view For example, it might be possible that one of the emotional expressions dominates the other after several exposures An examination of various measurements taken at different times could provide informative findings

Another question that needs answering pertains to other emotional expressions In addition to friendliness and aggressiveness, the two dominating emotional expressions when designing vehicles, other emotional expressions that can be communicated through design elements should be taken into consideration In this respect, it is important to find out which effects are produced by these emotional expressions and through which design elements they can be communicated This would allow researchers to derive even more fine-tuned guidelines for the application of anthropomorphized elements in product design As the current research shows, anthropomorphized design elements are a promising avenue to optimize a product's appearance with respect to both consumers' liking and its ultimate success in the market

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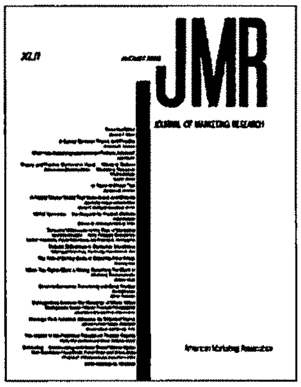

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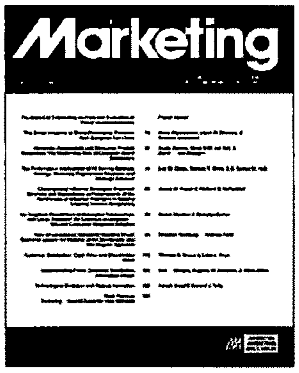

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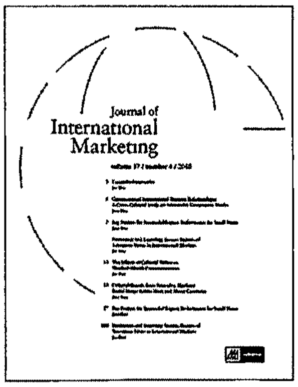

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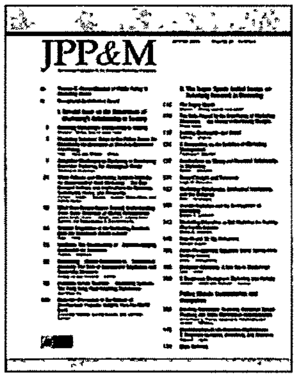

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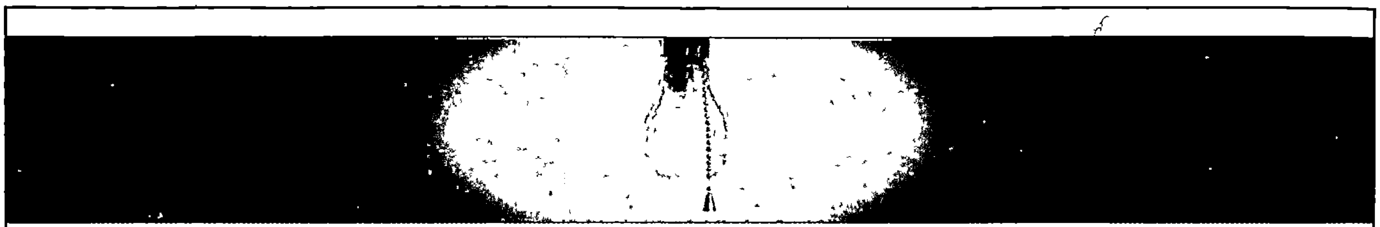

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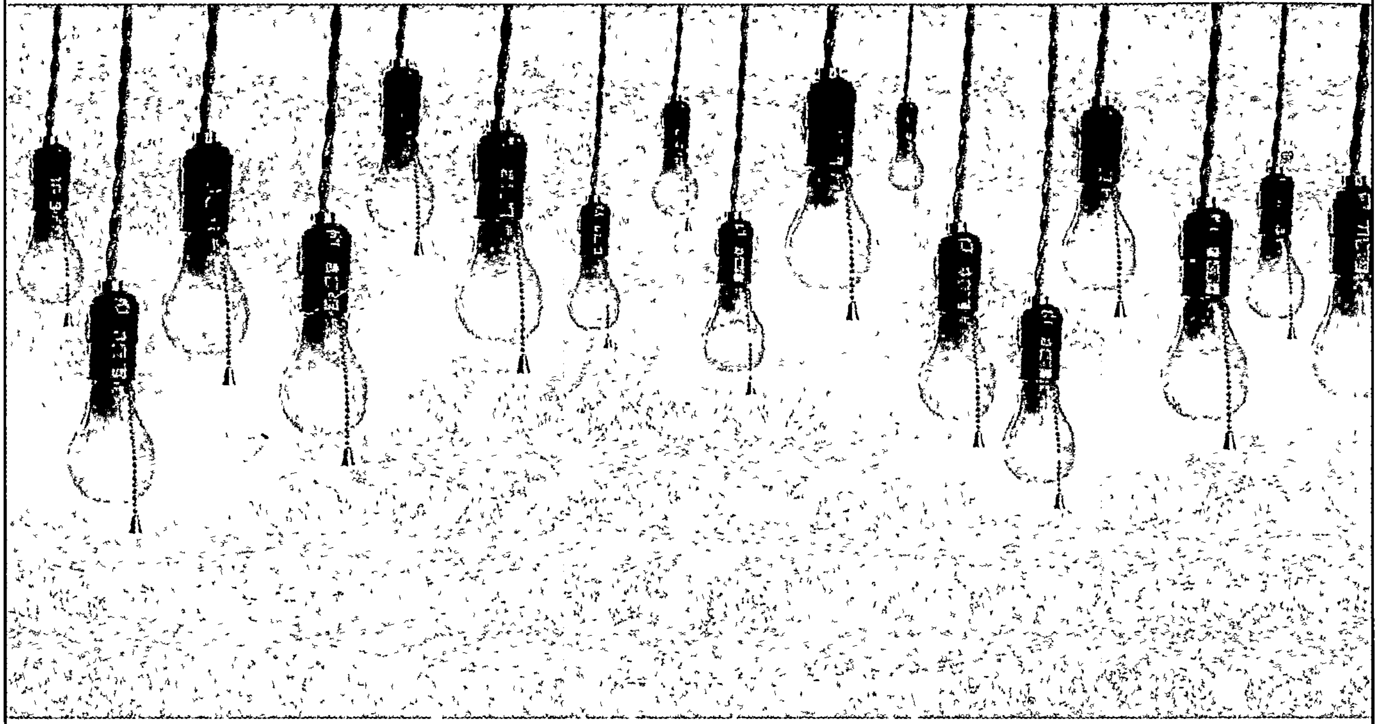

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